THE JOURNAL

OF THE

ROYAL UNITED SERVICE INSTITUTION.

VOL. XLVIII. APRIL, 1904. No. 314.

[*Authors alone are responsible for the contents of their respective Papers.*]

GOLD MEDAL PRIZE ESSAY.

Subject:—

"IN THE EXISTING STATE OF DEVELOPMENT OF WAR-SHIPS, AND OF TORPEDO AND SUBMARINE VESSELS, IN WHAT MANNER CAN THE STRATEGICAL OBJECTS, FORMERLY PURSUED BY MEANS OF BLOCKADING AN ENEMY IN HIS OWN PORTS, BE BEST ATTAINED?"

By Lieutenant A. C. DEWAR, R.N.

"*Wind and Fire.*"

SUMMARY OF CONTENTS.

I.—Introduction. Strategic Methods of Old-time Blockade are pointed out.

The factors which govern Modern Strategy are briefly sketched.

A Synopsis of Manœuvre Work is given to exemplify Modern Operations.

II.—The Capabilities and Limitations of Modern Vessels, including Torpedo and Submarine Boats, are Investigated.

III.—Treats of Blockade Strategy. Blockade Operations are not recommended.

The Essay endeavours to show that the Disadvantages of a Modern Blockade Outweigh its Advantages. Much, however, will depend on circumstances.

Accordingly, the Main Features of Blockade work are examined and a Plan of Blockade drawn up.

LEADING IDEAS.

	PAGE
Manœuvre Lessons	343
Torpedo-Boats	351
Submarine Boats	352
Plan of Modern Blockade	373

LIST OF TABLES

No. of Table.	Subject.	PAGE
1.	Types of B_1	345
	Speeds and Capacities	345
	Coal Tables	346
2.	Types of aC	347
	„ C_1	347
	Coal Tables	347
3.	Types of C_2 and Coal Table	348
4.	Types of C_3 „ „	349
5.	Types of T.B.D. „ „	350
6.	Types of T.B.	351
7.	Types of S.B.	352
8.	Number of Vessels in Blockade Plan	373
9.	Communication Scheme	376
10.	Signal Lamps in use	377
11.	Rocket Signals	378

PLANS.

		PAGE
1.	Submarine-Boat Tactics.—	
	a. Danger Area	353
	b. Limit Angle	354
	c. Error in Estimating Enemy's Course	355
2.	Wireless Chain	359, 360
3.	Patrols Required for Blockade	365
4.	Blockade Positions—	
	a. Ordinary	368, 369
	b. Close	370, 371
	c. T.B. Blockade	372
	d. Destroyers — Limit Distance from Base	372
5.	Blockade Tactics—Cruiser Chain	375, 376

I.

INTRODUCTION.

A century ago, unless a fleet chanced to sight the enemy leaving their port, it was almost impossible to get news of them, and they might—and did—evade pursuit for months.

It was, therefore, imperative to approach their ports and keep as close a watch as the weather would permit.

The strategical object pursued was:—

1. *To gain touch with the enemy.*
2. *To bring the enemy to action.*

If the enemy decided to remain in harbour a blockade ensued.

Though battles occupy the most prominent positions in history, yet the great campaigns hinged on blockades and the principal battles were the outcome of blockade strategy.

The question at issue is:—

How can the objects formerly pursued by close blockade be attained at the present day? The principle of blockade lay in the wisdom of seeking an enemy at his starting point. This principle is still sound so long as the enemy waits for the blockading fleet to arrive; but the factors governing the details of blockade operations have changed. The end is still the same, but the methods of attaining our end have altered. Modern weapons have changed war, and multiplied the conflicting issues which a leader must combine into a harmonious practical scheme.

OLD-TIME STRATEGY.

To grasp the part which the blockade filled in the naval wars of the past, and the actual object sought, we must study the old campaigns, and examine them with blockade strategy as our key-note.

Thus we find that the great campaigns of 1790-1805 hinged on blockade operations, and the establishment of blockades was invariably the first strategic move on the part of England. The adoption of blockade strategy was the natural outcome of two circumstances:—

1. *The difficulty of obtaining reliable news of the enemy by any other method.*
2. The attitude of passivity which characterised the French at that time, when all available talent and energy were absorbed by the Imperial Armies.

Neither of these circumstances exist at the present day, and the mere fact that St. Vincent and Nelson, working under very different conditions in 1803, employed blockade strategy, is no criterion for its adoption in 1903. *The fundamental assumption in blockade operations is that the enemy will wait for the blockading force to arrive,* which they may or may not do in modern times; probably not.

A clear line of distinction must be drawn between old-time strategy and old-time tactics.

Strategy consists of the distribution of forces or their concentration at a point of effort. Tactics applies them.

The blockade strategy of the past is still interesting, as it images many modern possibilities of force distribution.

Old-time tactics, however, were dependent on obsolete weapons, and can teach us nothing.

Strategic Features.

The strategic features of the old blockade may be summarised as follows:—

1. On the outbreak of war, an equal force was despatched to cruise off each of the enemy's ports.
2. On the expectation of war with another Power (Mann off Cadiz, 1796), or the approach of a large free squadron (Keith off Cadiz, 1799, Calder off Ferrol, 1805), *smaller blockades were abandoned, and squadrons fell back on the main fleets.*
3. *On the junction of superior forces in a blockaded port, the blockading squadron retired* (Jervis off Toulon, 1796, Calder off Ferrol, 1805).

The opening of the campaign consisted in establishing a state of equilibrium by masking hostile squadrons in their own ports. The escape of any squadron or the outbreak of war with another Power disturbed the equilibrium, and necessitated another distribution of forces.

Jervis was the great exponent of blockade, and the first to thoroughly grasp that if the enemy adopted a passive attitude, the masking of their forces by blockade left our surplus ships and frigates in command of the sea. His blockades were strictly enforced, and he instituted the routine which Cornwallis followed in his rigid watch on Gauteaume from 1803 to 1805. It had formerly been the custom for the main fleet to lie at Spithead with look-outs before Brest. This method was not successful. In 1794, while Howe and the main fleet were at Spithead, 6 French ships escaped from Brest; and again in 1799, while Bridport was up Channel, Bruix sailed unobserved with a large fleet for the Mediterranean.

The enemy's fleet did not often come out and directly attack the blockading force. While the blockading squadron were at their post, the enemy usually preserved a passive attitude, and remained in port. Trafalgar is the only instance in which the blockaded fleet came out and directly engaged the blockading force.

Considering the principal battles in relation to the blockade strategy of the campaign—

Quiberon (1759) was brought on by the escape of the French during absence of blockading squadron, and ultimate pursuit.

St. Vincent (1759), by Boscawen retiring to Gibraltar for repairs. Toulon fleet escaped, and was brought to action off St. Vincent.

St. Vincent (1797), by Jervis abandoning blockade of Toulon, and finally taking up a strategical position off St. Vincent.

Nile (1798), escape of French fleet and pursuit by Nelson.

Trafalgar (1805), direct attempt to issue from port in face of blockading fleet.

OLD-TIME BLOCKADES.

The name is practically the only feature which the blockade of 1803 possesses in common with that of 1903.

The principal factor in the old-time blockade was wind, and the prevailing winds dictated the plan of blockade. At Brest the prevailing winds are between N.W. and S.W., and ships often had to wait weeks for a wind to take them through the Goulet; meanwhile the blockaders cruised about with little to disturb them. If the wind were easterly, the English fleet closed up, ready for the enemy sailing. Severe gales are experienced from all directions, and if the blockading fleet were driven off by weather, they made for Plymouth or Falmouth, confident that the enemy would not attempt to come out in a gale which drove the English fleet back to its ports. The conditions off Toulon were more favourable to the French. There N.W. winds prevail, and the Gulf of Lyons is notorious for bad weather and gales, which often drive the blockading fleet off. Howe and Bridport kept the main body of their fleet in port during winter. According to the former, the fleet should be anchored at a convenient port in Channel, and trust to frigates to bring in word of the enemy's movements. He considered that the long blockade watch broke up the ships.

This was not a good policy for the Brest blockade, for the Channel ports were all in rear of Brest, and if the French sailed with an easterly wind, the frigates conveying the news had to beat up Channel; meanwhile the wind might shift to westerly, its usual direction, and the British might have to beat down.

While Bridport was in command, De Galles' fleet escaped from Brest (1796), and 6 French ships sailed to reinforce the Toulon contingent, while Howe and the British fleet were anchored at Spithead (1794).

When St. Vincent went to the Admiralty, the permanent force before Brest was increased to 24 sail; when the fleet returned to port for water and provisions, everything was held in readiness for instant departure; officers were not allowed to sleep ashore, or to go three miles from the beach.

Off Toulon the fleet had to rely more on its own resources, and the policy of lying at a base in order to husband its strength was more correct than off Brest.

Corsica was Hood's strategic base for watching Toulon, and San Fiorenzo his principal anchorage. Nelson's principal anchorage for the Toulon fleet was Maddalena Bay. Under Jervis, off Toulon in 1796, the main fleet cruised off the port from April to October. In winter the heavy weather forced the blockading squadron to spend much of its time in port.

Characteristics.

The great dividing characteristics which distinguish the old-time blockade from the present may be laid down as follows:—

1. *There was much less danger of sudden concentration upon a single squadron.*

   The blockading force rarely had to meet a preconcerted and simultaneous attack from the blockaded fleet and an escaped squadron. Wind conditions and slow communication nullified any attempts of this sort.

Strategy consists of the distribution of forces or their concentration at a point of effort. Tactics applies them.

The blockade strategy of the past is still interesting, as it images many modern possibilities of force distribution.

Old-time tactics, however, were dependent on obsolete weapons, and can teach us nothing.

Strategic Features.

The strategic features of the old blockade may be summarised as follows:—

1. On the outbreak of war, an equal force was despatched to cruise off each of the enemy's ports.
2. On the expectation of war with another Power (Mann off Cadiz, 1796), or the approach of a large free squadron (Keith off Cadiz, 1799, Calder off Ferrol, 1805), *smaller blockades were abandoned, and squadrons fell back on the main fleets.*
3. *On the junction of superior forces in a blockaded port, the blockading squadron retired* (Jervis off Toulon, 1796, Calder off Ferrol, 1805).

The opening of the campaign consisted in establishing a state of equilibrium by masking hostile squadrons in their own ports. The escape of any squadron or the outbreak of war with another Power disturbed the equilibrium, and necessitated another distribution of forces.

Jervis was the great exponent of blockade, and the first to thoroughly grasp that if the enemy adopted a passive attitude, the masking of their forces by blockade left our surplus ships and frigates in command of the sea. His blockades were strictly enforced, and he instituted the routine which Cornwallis followed in his rigid watch on Gauteaume from 1803 to 1805. It had formerly been the custom for the main fleet to lie at Spithead with look-outs before Brest. This method was not successful. In 1794, while Howe and the main fleet were at Spithead, 6 French ships escaped from Brest; and again in 1799, while Bridport was up Channel, Bruix sailed unobserved with a large fleet for the Mediterranean.

The enemy's fleet did not often come out and directly attack the blockading force. While the blockading squadron were at their post, the enemy usually preserved a passive attitude, and remained in port. Trafalgar is the only instance in which the blockaded fleet came out and directly engaged the blockading force.

Considering the principal battles in relation to the blockade strategy of the campaign—

Quiberon (1759) was brought on by the escape of the French during absence of blockading squadron, and ultimate pursuit.

St. Vincent (1759), by Boscawen retiring to Gibraltar for repairs. Toulon fleet escaped, and was brought to action off St. Vincent.

St. Vincent (1797), by Jervis abandoning blockade of Toulon, and finally taking up a strategical position off St. Vincent.

Nile (1798), escape of French fleet and pursuit by Nelson.

Trafalgar (1805), direct attempt to issue from port in face of blockading fleet.

OLD-TIME BLOCKADES.

The name is practically the only feature which the blockade of 1803 possesses in common with that of 1903.

The principal factor in the old-time blockade was wind, and the prevailing winds dictated the plan of blockade. At Brest the prevailing winds are between N.W. and S.W., and ships often had to wait weeks for a wind to take them through the Goulet; meanwhile the blockaders cruised about with little to disturb them. If the wind were easterly, the English fleet closed up, ready for the enemy sailing. Severe gales are experienced from all directions, and if the blockading fleet were driven off by weather, they made for Plymouth or Falmouth, confident that the enemy would not attempt to come out in a gale which drove the English fleet back to its ports. The conditions off Toulon were more favourable to the French. There N.W. winds prevail, and the Gulf of Lyons is notorious for bad weather and gales, which often drive the blockading fleet off. Howe and Bridport kept the main body of their fleet in port during winter. According to the former, the fleet should be anchored at a convenient port in Channel, and trust to frigates to bring in word of the enemy's movements. He considered that the long blockade watch broke up the ships.

This was not a good policy for the Brest blockade, for the Channel ports were all in rear of Brest, and if the French sailed with an easterly wind, the frigates conveying the news had to beat up Channel; meanwhile the wind might shift to westerly, its usual direction, and the British might have to beat down.

While Bridport was in command, De Galles' fleet escaped from Brest (1796), and 6 French ships sailed to reinforce the Toulon contingent, while Howe and the British fleet were anchored at Spithead (1794).

When St. Vincent went to the Admiralty, the permanent force before Brest was increased to 24 sail; when the fleet returned to port for water and provisions, everything was held in readiness for instant departure; officers were not allowed to sleep ashore, or to go three miles from the beach.

Off Toulon the fleet had to rely more on its own resources, and the policy of lying at a base in order to husband its strength was more correct than off Brest.

Corsica was Hood's strategic base for watching Toulon, and San Fiorenzo his principal anchorage. Nelson's principal anchorage for the Toulon fleet was Maddalena Bay. Under Jervis, off Toulon in 1796, the main fleet cruised off the port from April to October. In winter the heavy weather forced the blockading squadron to spend much of its time in port.

Characteristics.

The great dividing characteristics which distinguish the old-time blockade from the present may be laid down as follows:—

1. *There was much less danger of sudden concentration upon a single squadron.*

   The blockading force rarely had to meet a preconcerted and simultaneous attack from the blockaded fleet and an escaped squadron. Wind conditions and slow communication nullified any attempts of this sort.

First. *The wind rendered times uncertain, and so dislocated any attempt at united action.*

Second. The wind that brought the reinforcing squadron was usually unfavourable for the exit of the blockaded squadron.

The utmost that an enemy's fleet could hope to perform was to escape from one port and enter another—a very different thing from simultaneously enveloping a blockading force on both sides.

Thus, when Cornwallis with 35 sail was blockading Gauteaume in Brest with 21, and Villeneuve was at Ferrol with 29, the wind conditions precluded any attempt at rapid concentration on the part of the French Admirals.

Again, when Keith with 15 sail was blockading the Spanish with 19, in Cadiz, a westerly gale prevented the latter coming out and joining the French fleet of 25 sail as it passed the port.

2. The blockading fleet had nothing to fear except from the enemy's ships of the line, which could only come out when the wind was favourable. There was no danger of night attacks to add to the blockade strain, and monotony was often the only enemy they had to contend with.

MODERN FACTORS.

We have now to consider the various factors which lie at the foundation of modern strategy. The principle of the old blockade Admirals lay in seeking an enemy at his starting point.

The questions before us are:—

1. How far the counter-attacking power of the enemy permits of this principle being carried into effect.
2. If it is not practicable, what other strategical methods are we to adopt?

Let us make a rough survey of the principal factors modern science has added to war:—

A.—*Steam and Speed.*

Infuse certainty into movement; *facilitate concentration and concerted action; render the escape of a blockaded squadron easier,* for it can take immediate advantage of favourable circumstances, such as a dark, rainy, or misty night. The area in which it is easiest to gain touch with the enemy lies within a radius limit of about 20 miles from the entrance. Speed enables an escaping squadron to pass over this area of observation in a very short time. The *blockading force cannot afford to patrol at full speed,* and cannot use its speed in pursuit till it is certain of the enemy's course.

B.—*Coal.*

Coal acts as a distance limit. If a squadron does not possess a coaling base, it must coal from colliers at a temporary base, where ships coaling will be very exposed to torpedo attack if within their range of action.

Colliers will always be a point of attack. In blockading, part of the blockading force will require to be at a base coaling.

C.—*Torpedo-vessels and Submarines.*

Within their range of action in fine weather constitute a perpetual menace, and compel constant watchfulness; necessitate special arrangement for harbour defence; limited by heavy weather and coal endurance. Submarines, when more developed, will practically bar all approach to a port within 50 miles during daylight.

D.—*Telegraphy.*

Renders concentration and concerted action easier.
Enables news of enemy to be rapidly transmitted.

E.—*Wireless Telegraphy.*

Increases scouting range.
Great assistance to a fleet in keeping touch with an enemy or a detached squadron. Enables a blockading squadron to maintain communication with its watching vessels and its own base.

MODERN STRATEGY.

The basis of strategy consists of a thorough grasp of the enemy's forces and their position, and the disposal of one's forces accordingly.

When the distribution of force is definitely settled, the opening strategical moves group themselves under three heads.

A.—*Blockade Strategy.* Fleet takes up a blockading position.

B.—*Position Strategy.* Fleet takes up a position depending on following considerations:—

Commanding the enemy's probable movements.
Not too far from a naval base.
Suitable for obtaining news of enemy.
Outside sphere of ordinary T.B. attack.

C.—*Base Strategy.* Fleet attaches itself to a naval base or cruises within 60 miles of it; waits for information.

In blockading strategy, the fleet will close right up to a port, only withdrawing as far as modern factors render absolutely necessary.

In position strategy, the fleet takes up a strategic position, such as 50 miles S. of Land's End, 20 miles W. of Cape St. Vincent, 50 miles S. of Port Mahon, etc., depending on circumstances.

In base strategy, the fleet is stationed within close touch, or daylight hours at easy steaming, of a naval base.

We will consider these plans in detail later on; but before undertaking a comparative analysis of their features it is necessary to tie ourselves down to the actualities of warfare. *We must know the capabilities and limitations of modern vessels and instruments, and have an idea of the incidents which accompany, and to a great extent shape, naval strategy.* The sources from which we can obtain such knowledge are:—

Manœuvres.
Modern Wars.

The tactics of last century will not assist us. Manœuvres are only an image of the reality; but they give us an idea of the possibilities of naval war, and focus our minds upon its probable contingencies.

There have been no modern wars between first-class antagonists from which we can gather much strategical experience. In both the Chino-Japanese and the Spanish-American the contest was too one-sided to throw much light on the subject. In fighting an inferior antagonist the rules of warfare are relaxed. Some of the incidents of the Spanish-American war are noteworthy, and the tactics of both wars repay study, and illustrate the effect of modern gunfire; but the strategy was shapeless, and the lessons of these wars cannot be considered as universally applicable. When one antagonist is hopelessly inferior, the strategy adopted cannot be included in the category of standard operations, where a normal amount of organisation and energy is postulated on either side.

In compiling a summary of various manœuvres we have merely emphasised the instructive incidents without wasting space on irrelevant details or criticism.

MANŒUVRES.—MODERN WARS.

France, 1895.

1. Torpedo craft are compelled to return to Brest by heavy weather. Fleet escapes from Brest, followed by watching cruisers, but *succeeds in getting out of sight.*

2. In Mediterranean:—

Nine cruisers *spread fan-wise on diverging lines* to look for enemy's fleet.

1 is captured, 2 lost, 2 broke down, 1 followed wrong course, 1 only discovered fleet.

Endeavour to recall and concentrate cruisers unsuccessful.

Fleet follows "Flibustier" as guide, but loses her, and does not find enemy.

Enemy's fleet is finally found by chance.

3. Blockade of Ajaccio:—

Blockaded cruisers put to sea nightly, and were very active.

Concentrated to north one night, using searchlights freely.

Main force of blockading squadron, deceived by searchlights, were led away to N., *and blockaded fleet escapes.*

Channel, 1897.

Heavy weather prevented use of T.B.G.

Cruiser "Spartan" *sights her own division twice, and, mistaking them for enemies,* steams away at full speed each time.

Cruiser "Terpsichore" makes an ambiguous signal which drags the Admiral off on wrong scent.

Cruiser "Powerful" *reports enemy as steering E., when they were steaming W.*

Channel, 1899.

Carefully prepared search plan was nullified by fog.

Fleet searching for convoy on carefully devised plan never approached within 150 miles of it.

Thick fog occasionally interrupted scouting operations.

Watering and repairing facilities at most ports in United Kingdom are very poor.

Flaming of destroyers difficult to prevent.

Destroyers cannot stay at sea more than 3 days.

"Europa" suddenly sights "A" fleet emerging from fog bank 4 miles off.

T.B.'s in Belfast, Kingstown, and Waterford, closely watched by destroyers; *but difficult to prevent escape of T.B.'s at night.*

Information sent by C.G. stations was misleading and wortnless.

CHANNEL, 1900.

"B 2" fleet passes "A 1" and "A 2" *at night within 3 miles.* Fleets *do not sight one another.*

Cruisers proved useful in hunting down hostile torpedo-boats by day.

Old battle-ships were a great hindrance to fleet, as regards speed and coal capacity.

Telegram to commence hostilities was handed in at 10.30 in London. *Did not reach Senior Officer at L. Swilly till 12 midnight.*

Fleet sailed at 2 a.m., 3½ hours after declaration of war.

Destroyers closely watched hostile cruiser squadron off S. Coast of Ireland.

Destroyers were easily able to keep a safe distance from hostile cruisers.

Destroyers attacked hostile cruisers at night. Distances greatly misjudged. Torpedo fired 1½ miles off.

Value of laid down course, as well as preconcerted rendezvous, "A 3," having been ordered to come up 15th meridian, was successfully intercepted, and sent elsewhere by "Pioneer."

Officer with knowledge of ships proved very useful in batteries in hastening recognition procedure.

Two conflicting orders, despatched consecutively by flag, do not bear exact time of issue. They reach C.G. station some hours afterwards. Doubt arises as to which was issued last.

Hostilities commenced 10.30 p.m. Admiral of "B" fleet at *Milford Haven does not receive news till 6 a.m.,* and telegram reporting that "A 3" had not passed Gibraltar did not arrive till after Admiral had left. The lack of this information handicapped his action.

Intelligence from C.G. stations proved very unsatisfactory.

Chiefly consisted of their own Admiral's movements so distorted as to be almost unrecognisable.

A false report of enemy's fleet by "Panther," caused by three gunboats attacking Campbelltown, leads Home Fleet north on wrong scent.

Destroyer mistakes Battle Fleet by night, a mile off, for 6 T.B.'s.

Gun-boats have not sufficient speed to support or cope with T.B.'s. They are of little value as look-outs owing to small size and weak signalling.

Cruisers sight "A" Fleet off N.W. of island, but are successfully driven off by hostile cruiser force.

"A" and "B" cruiser divisions meet.

"B" cruisers (ordered not to fight) unable to run owing to "Vindictive" *disabling one engine at critical moment.*

T.B.D. kept T.B.'s well in hand, *and were too fast for hostile cruisers to bring to action.*

MEDITERRANEAN, 1900.

1. T.B. flotilla fails to find enemy's fleet in small area at night. Range of vision about 1½ miles.

Fleet, expecting attack, anchor close in shore under range of hills.

2. Blockading exercise not very successful. Dark night. battleships could not be seen more than ½ mile off.

"Vulcan" runs nearly on top of enemy's Battle Fleet at 11 p.m. Mistaken for friendly cruiser, and not fired on.

Admiral not informed till 3 a.m.

Difficulty in recalling ships from their patrols.

Faults:—

1. Positions of various ships not known to one another.
2. *No rendezvous for information.*
3. Ships scattered too far.
4. No simple signal for recall.

CHANNEL, 1901.

1. Admiral of "X" considered that by defeating "B's" cruiser squadron it would be impossible for "B" to bring him to action against his will.

Concentrates his cruiser divisions against "B's" scattered cruisers.

"B" suffered from scattering his cruisers. His fleet, being inferior in speed, was very dependent on cruiser service.

2. "Apollo" and "Latona," waiting at R.V. for "B" cruisers, sight "X" cruisers, but *do not at first recognise them as enemies.*

3. "X" cruisers fall on "B" cruisers off Scilly Isles before the latter knew of outbreak of war.

"B" cruisers spread, and not in battle formation.

"X" cruisers also somewhat scattered after chasing "Apollo" and "Latona."

4. "B's" cruisers practically destroyed in first 24 hours.

They were:—

1. Close to enemy's base.
2. Unsupported by Battle Fleet.
3. Spread out.

5. Mistake in signal. "Minerva" and "Hyacinth" proceed to scout off Scillies, instead of meeting "B" Fleet at R.V.

6. Blockade of T.B.'s in Alderney by cruisers and T.B.D.'s.

No definite orders or plans issued. Conducted in a somewhat haphazard fashion.

Cruisers fired on their own T.B.D.'s.

T.B.D.'s kept search-light blazing on "Melampus," thinking she was an enemy.

Rocket was fired by accident one night. Utter confusion prevailed; everyone steaming full speed in all directions for about an hour. Cruisers firing on their own T.B.D.'s, T.B.D.'s torpedoing their own cruisers. Mouth of harbour was open for enemy to escape during this manœuvre.

7. Main Fleet raise blockade of Alderney, and swallows up small blockading squadron.

8. Hostile Battle Fleets *within 4 miles of one another at night.* Admirals unwilling to engage in dark. Cruisers in close touch, and firing. *In morning, "B" cruisers had lost touch.* Had "B" Fleet kept touch, chance would have favoured him, as "Mars" broke down in the morning, and she must have either been captured, or seriously hampered the movements of "X" Fleet.

9. "B" Fleet informed by wireless of "X" Fleet 30 miles off.

Destroyers useful in blockading work, but require a base not far off.

Destroyers did good work as scouts in fine weather.

T.B.'s not very active.

France, 1901.

1. Fleets met in dark at 3 a.m.

Cruiser division following a cruiser decoy come suddenly upon main fleet and are captured.

Admiral informed of enemy's position by a destroyer scout.

Fleet lost touch with all its cruisers.

Heavy weather lowered speed of Battle Fleet to 12 knots.

Speed of "A" Squadron reduced to 13 knots by "Brennus," which proved herself a bad steamer.

2. Blockade of Ajaccio. Inner line, consisting of torpedo-boats and destroyers, 3 miles from entrance.

Blockading Fleet steaming in cruising formation at dawn with ships far apart. Hostile squadron sighted at daylight 4,500 yards off. Blockading Fleet made an effort to get into battle formation, but was adjudged defeated.

3. Small despatch vessels of no assistance in scouting work.

France, 1902.

Abbreviations.

B = Battle-ship.	C_1 = Cruiser 1st class.
B_1 ,, 1st class.	C_2 ,, 2nd ,,
B_2 ,, 2nd ,,	C_3 ,, 3rd ,,
B_3 ,, 3rd ,,	D Destroyer.
C Cruiser.	

1. Part I. North Squadron represent enemy coming from Atlantic, $2B_2$, $3B_3$.

Mediterranean Fleet, $9B_1$, posted at Algiers, with Cruiser Division at Mers-el-Kebir.

Chain of W.T. from Gibraltar to Alboran, 130 miles.

$3C_2$ form the chain and 1 despatch-vessel to Mers-el-Kebir.

Cruiser Division, $1C_1$, $2C_2$, $2C_3$, sent to West to meet enemy.

2. Enemy from Atlantic sighted at 5 p.m., July 8th, and followed.

Head of chain sighted at 11 p.m., July 8th.

News of enemy transmitted by W.T., and cruiser chain reaches Mers-el-Kebir, 230 miles, at 5 a.m.

Cruisers lose touch during night of July 8th, but enemy sighted at dawn.

T.B.'s from Oran sighted enemy during day, but lose touch, and fail to attack.

North Squadron alter course, and are lost sight of during night of July 9th.

1 gun-boat and 1 D stick to enemy, but are driven off in morning by cruisers of fleet.

Enemy sighted by chance, and touch regained, but manœuvre period is over.

3. Part II. T.B.'s organised for attack on squadron in Straits of Bonefacio. *Clear night. T.B.'s fail to find squadron, and are caught by D. in morning and put out of action.*

4. Part III. Distribution of Force:—

	Bizerta.	Toulon.	Ajaccio.
France ...	$3B_2$	$4B_1$	
Enemy ...	$3B_2$, 5C (Watching)		$5B_1$, 5C Main.

5. 5C of enemy's main fleet form linking chain from Ajaccio to S. of Sardinia.

Bizerta Squadron puts to sea for Toulon, 8 p.m., July 28th. Watching fleet observe and follow. News transmitted by despatch-vessel to chain, and reaches enemy's Admiral at Ajaccio by 3 a.m. *310 miles in 7 hours.*

Watching fleet follow Bizerta Squadron, and gain touch with Main Fleet, linking chain at 6 p.m., July 29th. Course of French passed to Main Fleet at Ajaccio, 230 miles in 8 hours.

Main Fleet kept informed of movements by W.T. and linking chain, *and comes up with Bizerta Squadron 3 p.m., July 30th.*

Points.

Linking chain of 5C keep touch between enemy's Main Fleet at Ajaccio and Detached Squadron following French.

T.B.'s not very successful in their operations.

Submarine operations show that, at sea, surface cruising boats (submersibles) are the only type of any use.

Attack on vessels under way is very difficult.

MEDITERRANEAN, 1902.

Abbreviations.

B_1 = Battle-ship 1st class.	C_2 = Cruiser 2nd class.
aC Armoured cruiser.	C_3 „ 3rd „
C_1 Cruiser 1st class.	D Destroyer.

1. Argostoli blockaded.

Blockading Fleet, $12B_1$, 1aC, $3C_1$, $8C_2$, $4C_3$, 14D.

Blockading Fleet, $8B_1$, 1aC, $3C_2$, $2C_3$, 7D.

2. A good deal of night fighting at mouth of harbour between T.B.'s and D.

Picket-boat of Blockaded Fleet, lying close in under land, torpedoes one of watching destroyers.

3. Night formation.

1D, three miles from entrance.

Remainder of D 12 miles from entrance, patrolling on radiating lines 3 miles apart.

Cruisers, 30 miles from entrance, patrolling on radiating lines 10 miles apart.

Battle Fleet, 40 to 50 miles from entrance, line abreast, 1 mile apart.

4. Want of co-operation between divisions of Blockading Fleet.
No definite R.V. for Information.
No simple code of signals.

5. 7.30 p.m., October 4th, cruisers of Blockaded Fleet put to sea. "Chamois," at entrance, recognises them as C. and remains at post.

About 9 p.m., "Myrmidon" observes cruisers, *mistakes them for Battle Fleet*, and signals: "Battle Fleet escaping to S.E." "Niobe" takes in "Myrmidon's" signal, and tries to pass it on, but does not leave her patrol.

About 10.30, "Gladiator" observes and recognises cruisers escaping; goes to inform cruiser Admiral in "Andromeda"; does not find him, and returns to patrol. "Andromeda" has left her patrol.

About 10.30, "Pegasus" observes cruisers, *mistakes them for B.*, and follows them, signalling: "Battle Fleet escaping."

T.B.D's in Zante Channel observe cruisers, *mistake them for Battle Fleet*, detach "Griffon" to inform "Andromeda," and follow them, intending to attack. "Orwell" finds that vessels are C., and gives up chase.

About 10.30, signals of "Pegasus" and "Griffon" seen by "Andromeda" (cruiser Admiral). He proceeds S.E. with "Pandora" to investigate. Meets "Orwell," which reports vessels as cruisers. "Orwell" is sent to inform Commander-in-Chief.

About 11 p.m., "Pegasus" is still making signal for "Battle-ships escaping." "Andromeda" accordingly goes on; finds nothing; returns at 6 a.m. "Pegasus" discovers her error, and gets back at 7 a.m.

About 11 p.m., "Aboukir," Senior Officer of escaping cruisers, made false signal for "Battleships escaping" (3 rockets).

"Rainbow" repeated it, and left patrol to search to S.E.

6. At 9.30, "Chamois" sees Battle Fleet escaping. *Cannot find C.-in-C.* Meets and informs "Boxer" and "Griffon."

About 10.30, "St. George" observes Battle Fleet passing.
Signals to "Pactolus."
"Pactolus" to "Brilliant."
"Brilliant" did not pass to "Furious."

At 12 p.m., "St. George" finds signal has not been passed; signals to Flag with searchlight; *but signal is not acted on, as it was considered a ruse of enemy.*

"St. George" considers that Admiral must have started, and proceeds to follow enemy.

7. At 7 a.m. Vice-Admiral, in "Majestic," receives news from "Brilliant."

"Boxer," "Griffon," "Chamois," "Orwell" looking for Commander-in-Chief all night.

At 5.30 a.m., "Orwell" finds Commander-in-Chief, and reports escape of cruisers.

At 6 a.m., "Boxer" reports escape of Battle Fleet.

8. The use of mast-head flashing lamps, the usual method of signalling, was forbidden.

"Implacable" torpedoed by one of her own destroyers while leaving harbour.

SPANISH-AMERICAN WAR.

Abbreviations.

B = Battle-ships.		C_1	Cruiser 1st class.
B_1	„ 1st class.	C_2	„ 2nd „
B_2	„ 2nd „	C_3	„ 3rd „
B_3	„ 3rd „	aC	Armoured cruiser.
C Cruiser.			

1. Americans adopt Base Strategy.

Cruiser sent to San Juan, probable port of call.

North Atlantic Squadron ($2B_1$, 1aC, 2 Monitors) proceeds to San Juan, probable coaling port.

Flying Squadron ($2B_1$, 1aC, $4C_2$) off New York.

2. Cervera has fair weather; destroyers a drag on fleet.

Cervera arrives at Martinique. His arrival made known by cablegram.

Cervera not allowed to coal at Martinique. Coals his ships, two at a time, at Curaçoa.

3. Collier for Spanish Fleet, with 3,000 tons, captured off Santiago.

Information chiefly received by cablegram. Little effective scouting.

When Spanish Fleet sailed it was lost till next port of call.

Spaniards not actually seen in Santiago till ten days after arrival.

4. Blockade methods at Santiago.

Force, 2aC, 4B, $1C_1$, $1C_2$, $4C_3$.

By day, stationed in semi-circle 6 miles from entrance.

By night, *3 picket-boats 1 mile from entrance.*

1B at 2 miles with searchlight shining on entrance.

2B in support.

Remainder 3 miles from entrance.

This special formation was possible because:—

1. Santiago was not a naval port.

No coal, no T.B.'s, no resources.

2. Guns were obsolete. No searchlights.
3. Channel was narrow, intricate, and easily lit up.
4. Spaniards not very energetic.

Santiago had no resources, no facilities for repairs, no docks; only 2,000 tons of coal. Ships must deteriorate there, and bottoms were already foul. Fleet had only 120 rounds of 5·5 ammunition per ship.

5. Shore *versus* ship.

Bombardments:—San Juan, for 2 hours; Santiago, occasional.

Shore guns obsolete; but at Santiago four 6-inch B.L. were taken from the "Mercedes" and mounted on shore.

San Juan bombarded by 2B, 1aC.

Santiago by the Blockading Fleet.

Little damage done by ship fire. No guns dismounted. 1 old howitzer damaged. Fire silenced at Santiago on one occasion.

6. Cable Cutting: —

Santiago-Cienfugos.	Not cut.	Communication.
Cienfugos-Havana.	1 cut out of 3.	Communication.
Santiago-Jamaica.	1 cut.	Communication.
Santiago-San Nicholas.	Cut.	No Communication.

Shallow water cables were all cut.

No cable was cut in greater depth than 10 fms.

Deep-sea cables are:—

1. Not easy to locate.
2. Take some time to grapple.
3. Require special vessel to raise and cut them.

Shore batteries and rifle fire can prevent any attempt to cut cable close to shore.

7. Key West was 700 miles off, and Port Guatanamo, a small harbour, 50 miles from Santiago, was occupied as a temporary base.

MANŒUVRE LESSONS.

1. Fleets must be prepared to come into sudden and close contact with hostile ships at night.

Radiating lines of cruisers are a bad formation for rapid communication.

It is difficult to keep touch with a fleet at night, and a fleet sighted by hostile scouts will probably be able to shake them off. On a dark night ships cannot be seen more than ½ mile off.

2. *It is difficult for T.B.D. to prevent escape of T.B.'s from a port on a dark night.*

Destroyers can observe and keep at a safe distance from hostile cruisers in moderate weather.

Destroyers are useful in blockade watching, look out, and despatch work in fine weather. They should not be at sea for more than four days, and require a base within easy distance.

T.B.'s, even when knowing a fleet's position, have difficulty in finding them at night.

3. Small vessels which cannot steam more than 18 knots, and old battle-ships, hamper a fleet.

Ships under way over 10 knots need not be afraid of submarines at present.

4. Communication work and signal exercise in its widest sense are essentials to a fleet.

Observation work and scouting service must be intelligently performed. Doubtful or inaccurate news is worse than no news.

If necessary to identify ships at night, searchlights should be played on them for a few seconds.

5. Deep-sea cable cutting is a difficult work, and outside the capacity of an ordinary man-of-war.

II.

MODERN VESSELS.

Capabilities and Limitations.

Abbreviations.

aC = Armoured Cruiser.	C_3 = Cruiser, 3rd class.
B_1 Battle-ship, 1st class.	T.G.B. Torpedo-gunboat.
B_2 „ 2nd „	D. Destroyer.
B_3 „ 3rd „	T.B. Torpedo-boat.
C_1 Cruiser, 1st class.	S.B. Submarine-boat.
C_2 „ 2nd „	

The opening moves of strategy, or the lines which strategy will follow on any particular station, are:—

Base Strategy.
Position Strategy.
Blockade Strategy.

Before discussing these methods, the present development of war-ships, torpedo-vessels, and submarines will be briefly described. Only features of a strategical value need be considered, namely:—

Speed.
Coal Endurance.

The nature and properties of large vessels are well known, and require only a brief description. Large vessels are classified as battle-ships and cruisers. Battle-ships are grouped as B_1 (1st class), B_2 (2nd class). B_3 (3rd class).

Cruisers similarly, as C_1, C_2, C_3.

The advantages which large vessels possess are:—

Steady platform.
Greater degree of necessary comfort.
Greater range of vision.

These attributes give them a great superiority over smaller vessels in heavy weather.

We will briefly summarise the strategical points of the various classes of vessels:—

Battle-ships.

B_1.

Secondary guns all protected.
Speed over 15 knots.

B_2.

Not efficiently protected.
Speed 14 to 15 knots.
Reserve Line.

B_3.

Obsolescent. Guns not protected.
Speed under 14 knots. Last resource.

TYPES OF B_1. *Table 1.*

Nation.	Tonnage.	Speed.	Coal Capacity.	Vessel.
England	14,000	19	2,000	Duncan.
France	14,860	18	1,800	République.
	12,700	18	1,150	Suffren.
Russia	13,600	18	1,250	Borodino.
	13,100	18	1,350	Tsarevitch.
United States	15,300	19	1,900	Georgia.
	12,300	18	2,000	Maine.
Germany	12,000	19	1,100	Wittelsbach.
Japan	15,200	18	1,690	Mekasa.

The present tendency is towards:—

Greater Displacement.
Speed of 18 to 19 knots.
Heavier Armament.
Same Coal Capacity.

SPEED.

Trial trip speeds are not applicable to war conditions; it is easier to steam 1 mile at a speed of 18 knots than to actually cover 180 miles in 10 hours.

The extreme service speed for 24 hours may be taken as ·94 trial speed. *The strategical speed may be taken as ·9 trial speed.*

Thus a ship nominally of 18 knots, will steam 16·8 for 24 hours, and 16 for a long distance.

The following are the battle speeds of various battle-ships; the cruising speeds would be ·75 knot less.

Vessel.	Speed.	Coal Capacity.	Radius of Action at full-speed.
London	17·5	2,000	2,300
Formidable	16·8	2,000	2,300
Canopus	16·5	1,750	2,300
Majestic	15·8	1,900	2,600
Renown	16	1,750	3,100
Royal Sovereign	15	1,390	2,100
Iéna	17	1,100	2,100
Gaulois	16·5	1,100	2,200
Masséna	16	1,000	1,460
Carnot	16·2	700	950
Charles Martel	16·5	650	950
Brennus	15·8	600	800

Russian ships are not good steamers; the French ships of 1895-1900 steam well. English battle-ships are, generally speaking, more seaworthy than French, and more capable of maintaining their speed in heavy weather. It is difficult to compile an accurate speed table, as speeds vary for different ships of the same class, and the state of the hull will cause a difference of $\frac{1}{2}$ a knot. It is steaming power as much as speed, that is strategically valuable. A superiority of 1 knot in speed will only give an advantage of 24 miles per day, and this extra knot will often throw a heavy strain on the machinery and lead to breakdowns. In the 35 hours' chase after the escaped fleet (Mediterranean Manœuvres, 1902), *2 battle-ships broke down, and 1*

had to decrease to 12 knots for over 3 hours. To maintain a speed of 16½ knots, over 100 seamen had to be used for trimming coal; but if a chase was to be followed by an action, men who had been working hard for four hours in a bunker could hardly be expected to efficiently fight the guns and handle heavy ammunition.

Coal Endurance.

As far as coal endurance is concerned, it is necessary to know:—

Radius of action at different speeds.
Coal period (i.e., Time coal will last).
Amount of coal required monthly.

The coal tables of some modern battle-ships are appended. The coal points of a modern battle-ship (English) may be summed up roughly as:—

Miles. Radius of Action 12 k.	Full.	Days. Coal Period. at 12 k.	Tons Coal. For 30 days at 12 k.
4,200	2,300	15	4,000

The radius of action of French B_1 at full speed may be taken as roughly 2,000 miles; but to steam continuously for 48 hours at anything over 16½ knots will tax the powers of any modern battle-ship.

Coal Tables.

Speed.	Consumes Tons per Hour.	Coal Endurance Hours.	Radius of Action.	Miles per Ton of Coal.
		Implacable, 2,000 T.		
10	4	500	5,000	2·5
12	52	386	4,330	2·3
15	12	166	2,490	1·2
17·2 Full.	15	133	2.360	1·1
		Canopus, 1,750 T.		
10	3	583	5,830	3·3
12	4·75	368	4,410	2·5
15	7·8	225	3,380	2·0
16·5 Full.	12·3	142	2,340	1·3
		Victorious, 1,900 T.		
10	2·9	657	6.570	3·4
12	4·47	415	4,980	2·5
15	10·4	182	2,720	1·4
15·8 Full.	11·5	165	2,610	1·3
		Renown, 1,740 T.		
10	2	865	8,650	5
12	3·62	476	5,612	3·3
15	6·65	260	3,900	2·2
16 Full.	9·15	189	3.120	1·8
		Royal Sovereign, 1,390 T.		
10	2·9	478	4,780	3·4
12	4·6	302	3,624	2·6
15	8·65	161	2,420	1·7
15·5 Full.	10	139	2.160	1·6

aC (armoured cruisers) are the development of large 1st class cruisers, and are used for the same purposes, viz.:—

Scouts.
Anti-scouts to drive off enemy's cruisers.
Leaders of cruiser divisions.
Trade Protectors.

TYPES OF aC. *Table 2.*

Nation.	Tonnage.	Speed.	Coal Capacity.	Vessel.
England	14,000	23	2,200	Drake.
	12,000	21	1,600	Cressy.
	9,800	23	1,600	Cornwall.
France	12,400	22	2,100	Victor Hugo.
	10,000	21	1,600	Sully.
	9,500	21	1,600	Montcalm.
United States	13,800	22	2,000	California.
Russia	12,300	20	2,100	Gromovoi.
	7,800	21	1,100	Bayan.
Germany	8,800	20	1,500	Heinrich.
Japan	9,800	21	1,300	Idzumo.

C_1.

C_1 are being superseded by aC.

TYPES OF C_1.

Nation.	Tonnage.	Speed.	Coal Capacity.	Vessel.
England	11,000	20	2,000	Spartiate.
	11,000	19	2,100	Andromeda.
	14,200	22	3,000	Terrible.
France	8,300	22	2,000	Guichen.
	8,000	22	2,100	Châteaurenault.
Germany	5,600	18	950	Freya.
Russia	6,500	23	1,250	Varyag.
United States	9,700	22	1,500	Charleston.

COAL TABLE OF C_1.
Coal Capacity, 2,100.

Speed.	Consumes Tons per Hour.	Coal Endurance Hours.	Radius of Action, Miles.	Miles per Ton of Coal.
10	3·75	560	5,600	2·6
12	4·8	436	5,230	2·5
15	7·5	280	4,200	2
18	12·5	168	3,020	1·4
19	15	140	2,660	1·25

Coal required monthly for average speed of 18 knots = 9,000 tons.

Cruisers have gradually crept up to over 10,000 tons. Their cost is $\frac{7}{10}$ that of a battle-ship, and they are equally exposed to torpedo attack. These large vessels are built for speed, and are not sufficiently protected to place in the fighting line against contemporary battle-ships. We believe the type-development of cruisers in the next decade will tend towards *the survival of aC of about 11,000 tons and 22 knots; the introduction of scouts, pure and simple of about 3,000 tons displacement, a speed of 25 knots, and carrying 12-pounder guns only; and sufficient C_2 for fleet work, and to cope with armed merchantmen and trade destroyers.*

C_2.

C_2 are a class of which few are being built. They are types of a past decade, when 19 knots was the highest speed attainable. Many of them cannot steam more than 17 to 18 knots.

C_2 are useful in:—

Near scouting.
Link work.
Driving off T.B.D. and C_3 from a fleet when C_1 would be wasted.
Trade protection.

TYPES OF C_2. *Table 3.*

Nation.	Tonnage.	Speed.	Coal.	Vessel.
England	5,900	21	1,100	Challenger.
	5,700	19	1,170	Gladiator.
	4,400	18	1,000	Astræa.
France	5,500	23	900	Jurien de la Gravière.
	4,100	19	570	Catinat.
Russia	3,000	25	650	Boyarin.

COAL TABLE OF C_2.

Speed.	Consumes per Hour.	Hours Endurance.	Radius of Action.
10	2·3	544	5,440
12	3·2	390	4,680
15	5·6	224	3,360
19 Full.	10·	125	2,375

Coal required for 30 days, at average of 18 knots, is 6,200 tons.

The work sphere of C_2 with a fleet will depend greatly on the type of cruisers the enemy can oppose to them. If the enemy possesses a number of large swift cruisers, C_2 should not be detached too far from the fleet at the opening of a campaign. Their use should be confined to near scouting and link work till the enemy's large cruisers are located. Scattered couples of C_2 would probably be the first objective of any C_1 or aC the enemy could spare from fleet work.

C_3.

C_3 are suitable for:—

Attack of T.B.'s in heavy weather.
Links in wireless chain.
Look-out work.
Watch-keeping off a hostile port at night.

Vessels of this class are not sufficiently large to be in themselves an object for torpedo attack, and yet are large enough to lie off a port at night in fairly heavy weather and beat off torpedo-boats.

A development of this class of about 2,500 tons displacement, 25 knots, and carrying anti-torpedo guns only, would be of great assistance in port observation work.

TYPES OF C_3. *Table 4.*

Tonnage.	Speed.	Coal Capacity.	Vessel.
2,100	19	500	P. Class.
1,800	19	140	Barham.
2,300	19	230	Lavoisier.

COAL TABLE OF C_3.

Capacity, 500 tons.

Speed.	Consumes per Hour.	Hours Endurance.	Radius.
10	1·5	333	3,330
12	1·9	263	3,186
15	3·6	139	2,400
19 Full.	7·7	65	1,235

Amount of coal required for 30 days for speed of 18 k. = 4,800 tons.

T.G.B.

T.G.B. (torpedo-gunboats) are obsolescent, and would hamper a modern fleet. Their speed is not more than 16 knots; they have no radius of action, no offensive power, and are not large enough to face heavy weather. Such vessels must be relegated to harbour work, as they would handicap any fleet which uses them.

Some, however, have been re-boilered, and can do 19 knots. These would be useful in:—

Fleet look-out work.
Driving T.B.D. away from a fleet.

T.B.D.

T.B.D.'s are of use in:—

Attacking T.B.'s and submarines.
Blockading T.B. stations.
Despatch work in moderate weather.
Watching hostile ports.
Patrolling narrow waters.
Fleet actions.

TYPES OF T.B.D. *Table 5.*

Nation.	Date.	Tonnage.	Speed.	Coal Capacity.
England	1896	280	25	60
	1897 to 1901	300	28	80
	1903	550	25	130
France	—	300	26	75

COAL TABLE OF T.B.D.

Capacity 80 tons.

Knots	10	15	20	25	Full.
Coal per hour—tons	·66	1·12	2·4	4·2	6·25
Endurance hours	121	71	33	19	13
Radius of Action	1,210	1,070	670	480	360
Coal required for 10 miles	·66	·75	1·2	1·7	2·3

Coal required for 30 days at 20 k. = 740 tons.

NOTES.

Range of vision in clear dark night is about 1 mile. It is difficult to distinguish whether a vessel is a battle-ship or a destroyer without using the search-light.

Destroyers easily lose one another at night.

In line ahead at night, going at any speed, vision of boats in rear is greatly obscured by smoke and cinders from boats ahead.

Some boats (Laird's in particular) flame at the funnel very much.

At night it is difficult to judge of distance, course, or speed of enemy, and torpedo firing would probably be unsuccessful at anything over 400 yards.

Gun firing is usually poor. Firing by day at a target 6 feet by 6 feet, 800 yards off, being towed at 16 knots, five destroyers registered only 2 per cent. of hits. *Practice at night is still worse.*

For shutting up a torpedo station, if unfortified, and containing only C_3 and T.B.'s, keep a search-light across entrance from 1 T.B.D., with two or three others in rear.

A simple and uniform identity signal, by which boats could recognise one another at night, is required.

A T.B.D.'s sphere of utility is widest:—

In moderate weather.

Within 24 hours of a base.

In heavy weather the work capacity of the crew is greatly diminished by discomfort and lack of sleep, which lead to inaccuracy and haphazard methods.

In manœuvres, T.B.D.'s have shown that they can easily keep their distance from hostile cruisers, and have done good work in watch-

ing hostile ports and carrying information. *They are very liable to breakdowns, and ought not to be more than four days continuously at sea.*

Their tactical use in fleet actions is outside the scope of this essay; but if intended to be used for this purpose they should be carefully reserved for it, and withdrawn from strategical and other work. When the upper works and anti-torpedo armament of a battle fleet have been demolished by shell fire, *a determined attack by T.B.D.'s, approaching at 25 knots, would possibly decide an action.*

T.B.'s.

T.B.'s are intended for:—

Striking at battle-ships or cruisers from a permanent or temporary base.

They are not suited for continuous work at sea except in fine weather.

TYPES OF T.B.'s. *Table 6.*

Tonnage.	Speed.	Coal Capacity.	
130	23	25	England, 90 Class.
140	22 to 28	20	France, Haute-Mer.
80	22	10	1st Class.
100	21	17	Russia, 1st Class.

Radius of T.B.'s.

T.B.'s must do their work at night, and their strength lies in secrecy.

A flotilla caught at daylight with a hostile cruiser and destroyers between it and its base stands little chance of escape.

The ordinary striking radius of a T.B. may be taken as $\frac{1}{2}$ *(ground it can cover between nightfall and dawn).*

If this period be taken as 8 hours, and speed 18 knots, *the radius will be 72 miles. This merely means that a fleet 70 miles off will be outside the sphere of ordinary night work.*

In moderate weather on a dark night, one would think the chances were in favour of T.B.'s, if the hostile fleet could be sighted; but this is not borne out by French manœuvres.

A margin of error must be allowed for the inaccuracies unavoidable in small craft, due to vibration, want of space, and imperfect appliances; they cannot be expected to strike any spot, 50 miles off, within 5 miles; *their range of vision at night is small, not more than 1 mile, and to intercept a moving fleet within a mile in the open sea on a dark night is a matter of chance rather than plan.* Darkness is the best defence against T.B.'s. It is difficult to pick up an unlighted harbour on a dark night, even if one knows it well. A T.B. flotilla would probably be accompanied by a cruiser to play its searchlights momentarily on the Battle Fleet if met with. Night firing shows that at night a T.B., approaching at 20 knots, has a good chance of escaping without damage.

S.B.

Submarine-boats (S.B.) are intended for:—

Defence of their own harbours and approaches.
Harassing a blockading fleet.
Attack of enemy's harbours within their range.

These boats may be divided into two classes:—

Submarine.—Working only under water; limited range; suitable for defence of their own harbours.

Submersible.—Moving on the surface, and capable of submerging when required; wider range of action.

TYPES OF S.B. *Table 7.*

Vessel.	Complete	Building	Tons	Surface Radius	Submerged Speed	Remarks.
Gymnote ...	1	—	30	32	6	Submarine.
Gustave Zédé ...	1	—	270	40	6	
Morse	3	—	150	100	8	
Farfadet ...	4	—	185	100	8	
Narval... ...	5	—	106	250	8	Submersible, 10 mins. to submerge.
Naïade... ...	12	8	68	30	8	Harbour only.
Laubeuf ...	—	2	170	200	8	5 mins. to submerge.
Unnamed ...	—	3	170	—	10	

Notes on S.B.'s.

1. S.B.'s have very small range of vision; usual depth is 15 feet. At this depth one can only see 20 feet ahead.

The periscope is affected by wash of water, drizzle, and spray. Mirrors are affected by vibration of the boat, and are too near surface to give any field of view.

2. The fumes of accumulators (usual motive power when submerged) are deleterious.

3. *In any sea, vision is obscured by waves,* and hatch cannot be opened without risk of swamping.

4. *The turning circle is great, about 600 yards,* and this, combined with small range of vision and small speed, 6 to 8 knots under water, makes *manœuvring in shoal water very risky.*

5. Navigation must be very poor; there is no method of taking cross-bearings; *compasses are very liable to error, and with a strong channel tide running, it would be difficult to strike any particular spot within 5 miles.*

The maximum range of action may be taken as about 120 miles.

6. Aim can be taken while the hull is submerged with a periscope. As the tube, 17 feet long, lies in the fore and aft line, the vessel is pointing directly at an object whenever the latter is shown in the periscope. The generally accepted method of attack is to submerge from 3 to 5 miles off, shaping course to intercept the enemy, occasionally bringing the periscope above the surface in order to rectify errors in course; finally, to get the head on to the correct bearing and fire.

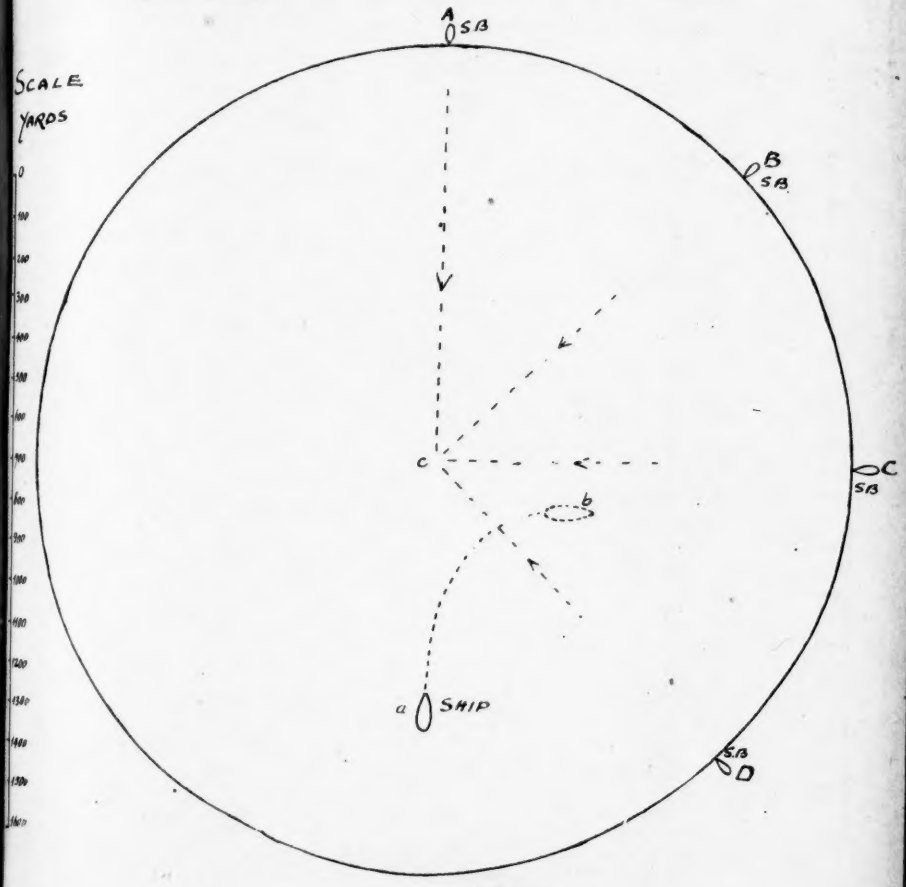
It must be noted that *the periscope gives no idea of distance, and that its utility is greatly diminished if there is any sea.*

SUBMARINE BOAT

Plan 1a.

Danger Area.

Torpedo Range	1,000 yards.
Speed of Torpedo	21 knots.
Speed of Ship	12 „



		Distance.
a. Position of Ship, when Torpedo is fired.	A	1570
b. Position of Ship, if she turns immediately Torpedo is fired.	B	1480
c. Point of Meeting in 1·43 minutes.	C	1150
	D	700

VERY T

BO

TIGHTLY

OUND

S.B.

Submarine-boats (S.B.) are intended for:—

Defence of their own harbours and approaches.
Harassing a blockading fleet.
Attack of enemy's harbours within their range.

These boats may be divided into two classes:—

Submarine.—Working only under water; limited range; suitable for defence of their own harbours.

Submersible.—Moving on the surface, and capable of submerging when required; wider range of action.

TYPES OF S.B. *Table 7.*

Vessel.	Complete	Building	Tons	Surface Radius	Submerged Speed	Remarks.
Gymnote ...	1	—	30	32	6	Submarine.
Gustave Zédé ...	1	—	270	40	6	
Morse	3	—	150	100	8	
Farfadet ...	4	—	185	100	8	
Narval... ...	5	—	106	250	8	Submersible, 10 mins. to submerge.
Naïade... ...	12	8	68	30	8	Harbour only.
Laubeuf ...	—	2	170	200	8	5 mins. to submerge.
Unnamed ...	—	3	170	—	10	

Notes on S.B.'s.

1. S.B.'s have very small range of vision; usual depth is 15 feet. At this depth one can only see 20 feet ahead.

The periscope is affected by wash of water, drizzle, and spray. Mirrors are affected by vibration of the boat, and are too near surface to give any field of view.

2. The fumes of accumulators (usual motive power when submerged) are deleterious.

3. *In any sea, vision is obscured by waves,* and hatch cannot be opened without risk of swamping.

4. *The turning circle is great, about 600 yards,* and this, combined with small range of vision and small speed, 6 to 8 knots under water, makes *manœuvring in shoal water very risky.*

5. Navigation must be very poor; there is no method of taking cross-bearings; *compasses are very liable to error, and with a strong channel tide running, it would be difficult to strike any particular spot within 5 miles.*

The maximum range of action may be taken as about 120 miles.

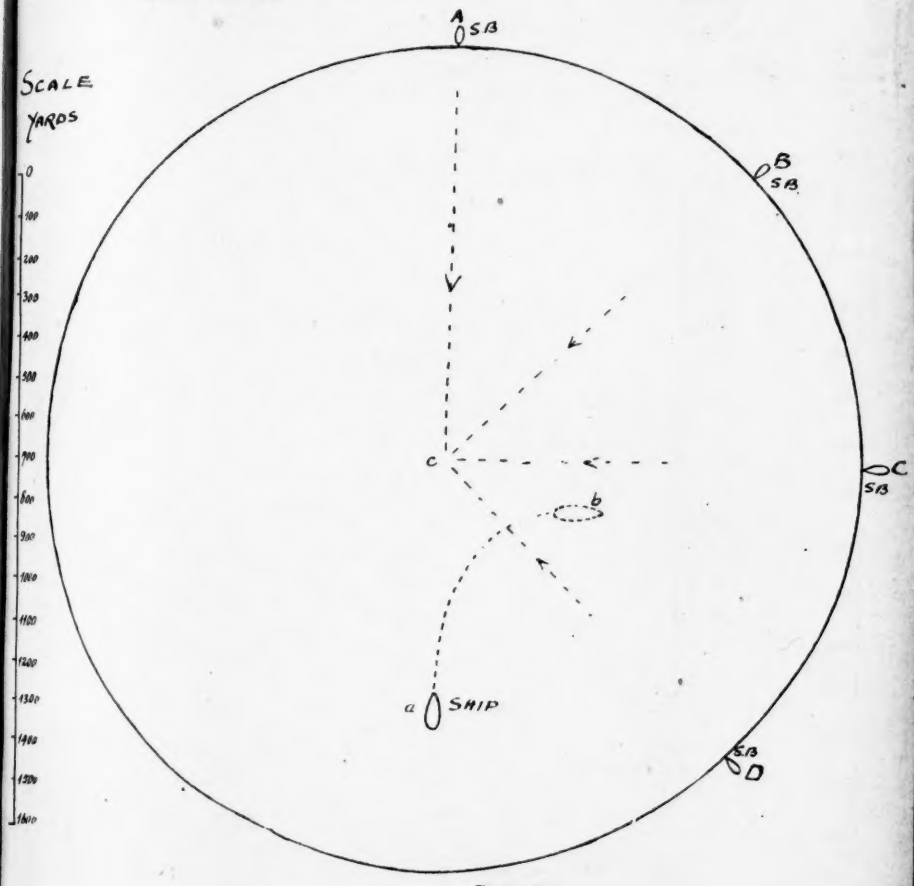
6. Aim can be taken while the hull is submerged with a periscope. As the tube, 17 feet long, lies in the fore and aft line, the vessel is pointing directly at an object whenever the latter is shown in the periscope. The generally accepted method of attack is to submerge from 3 to 5 miles off, shaping course to intercept the enemy, occasionally bringing the periscope above the surface in order to rectify errors in course; finally, to get the head on to the correct bearing and fire.

It must be noted that *the periscope gives no idea of distance, and that its utility is greatly diminished if there is any sea.*

SUBMARINE BOAT *Plan 1a.*

DANGER AREA.

Torpedo Range	1,000 yards.
Speed of Torpedo	21 knots.
Speed of Ship	12 „



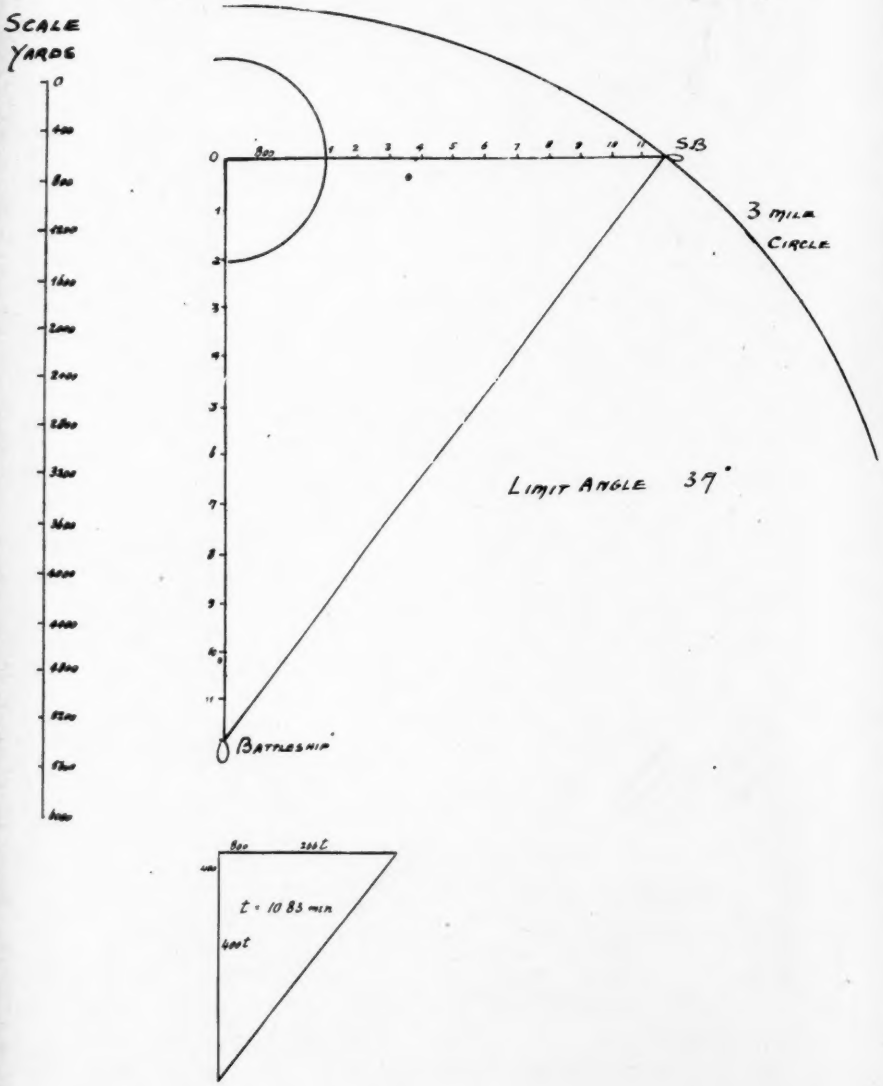
		DISTANCE.
a. Position of Ship, when Torpedo is fired.	A	1570
b. Position of Ship, if she turns immediately Torpedo is fired.	B	1480
c. Point of Meeting in 1·43 minutes.	C	1150
	D	700

SUBMARINE BOAT. *Plan 1b.*

Limit Angle.

If S.B be over 3 miles from a battle-ship, what is limit angle of bearing, outside which S.B. cannot intercept it.

Speed of Battle-ship - - - - - - 12 knots.
„ „ S.B. - - - - - - 8 „



SUBMARINE BOAT. *Plan 1c.*

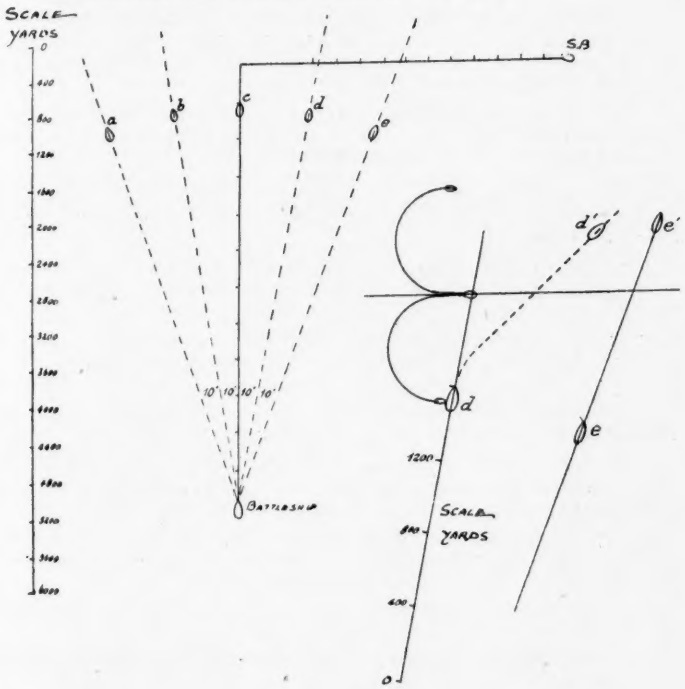
Error in Estimating Enemy's Course.

It is assumed that S.B. has sighted battle-ship 3 miles off.

If periscope and top of S.B. are constantly plunging out of water, battle-ship will sight it and turn away at full speed.

S.B. accordingly estimates course of battle-ship and shapes course to intercept.

Diagram showing result of error in estimating course.



a.
Error 20′.
Battle-ship is 2,400 yards off.
No chance of a shot.

b.
Error 10′.
Battle-ship is 1,600 yards off.
No shot.

c.
Correct.
Shot at 800 yards.

d.
S.B. comes up just ahead and has to turn. Circle 500 yards in 3 min. Battle-ship turns 3 pts. and in 3 mins. is at *d′*. Torpedo range 1,130 yards. No shot.

e.
S.B. comes up on port bow and turns. Battle-ship at end of 3 mins is at *e′*. Out of range. No shot.

S.B. Tactics.

As the tactical capabilities of a submarine has an indirect bearing on blockade strategy, this subject will be investigated more closely. We will assume that a battle-ship can sight an S.B. steaming on surface at a certain distance—the sighting distance.

The S.B., on reaching the sighting distance, must dive, and, allowing for the B.'s course and speed, bring the periscope to the surface again for final aim within torpedo range.

The S.B. must dive up at least once to take aim, as any attempt to fire without doing so would be analogous to a T.B. going 8 knots, with turning circle of 600 yards, trying to get her head on to a bearing on which her bow tube will hit a practically invisible enemy going 12 to 15 knots, whose course and speed are only roughly known.

Within sighting distance to final aim, the S.B. must keep out of sight; *if sighted, the B. has only to turn away and proceed at 15 knots in order to preclude any chance of attack.*

If the sighting distance be taken as 3 miles, or 6,000 yards, *the S.B. must run submerged between 6,000, and coming to the surface for its final aim.*

Taking distance from B. at which S.B. comes to surface as our analysing argument, an S.B. cruising submerged and ignorant of an enemy's proximity will come to the surface:—

A. Outside 6,000 yards (*Sighting Distance*).
B. Inside 6,000 yards (*a*) Within torpedo range.
(*b*) Outside „ „

In A the S.B. judges as nearly as possible the B.'s speed and course, sinks, and shapes course accordingly.

In B (*a*) the S.B., unconscious of the B.'s proximity, *chances* to *come to the surface within torpedo range*; this, however, will not be common, and according to the interval which may elapse in taking aim, the B., moving 400 yards per minute, may pass out of range. In B (*b*), the S.B. comes to the surface within 6,000 yards, *but outside torpedo range. The B. sights her and turns away.*

The only real method of actually putting an S.B. out of action is by T.B.D.

A battle-ship's 12-pounders, firing at an object 6 feet high, 4,000 yards off, may or may not hit it.

The weak point of the S.B. lies in the length of time taken to submerge. At present this is at least five minutes. In five minutes a T.B.D., going:—

20 knots, covers 3,300 yards.
25 „ „ 4,160 „

An S.B. on the surface would have little chance against a T.B.D. within 3,000 yards, towing a gun-cotton charge suspended from a torpedo-shaped float.

Weighing the adverse factors of:—

Low Speed,
Faulty Vision,
Bad turning powers,

we must conclude that S.B.'s sphere at present lies only in:—

1. Defence of its own harbours.
2. Defence of narrow channels, and up to 20 miles wide, if speed and course of an approaching fleet can be communicated to it.
3. *Entering enemy's harbour or approaching his anchorage,* if navigation is easy, *at dusk, lying submerged, and attacking in quarter light at dawn.*
4. Daylight on a calm day, when enemy is stationary and his position is known.

The S.B., however, like every other type of vessel, must improve in speed and range of action, *and will become a very formidable factor in naval war.*

WIRELESS TELEGRAPHY.

Like every contrivance when first exploited, the expectations concerning wireless telegraphy have outrun its performances. The maximum distance at which signals are received may be from 50 to 70 miles; under exceptionally good atmospheric conditions signals may be received by or from a land station at 90 miles. But the average practical distance with 2nd and 3rd class cruisers is about 30 miles; in the case of battle-ships, where the aerial wire is higher and the vibration less, 45 to 50 miles. With high land in the vicinity, as is the case in the Ægean and off Sicily and Sardinia, the distance dwindles down to 15 or 20 miles. These distances are deduced from an experience of ordinary wireless work with a fleet. The results obtained by Marconi and at schools of instruction at home would be much more favourable.

Wireless telegraphy is useful in wireless chain work, scouting, and information posts off naval bases.

Wireless Chains.

Wireless chains would be formations of occasional necessity. Mediterranean experience has shown that link vessels ought not to be more than 30 to 35 miles apart, when 2nd and 3rd class cruisers are employed. On several occasions, when vessels were stationed 50 to 60 miles apart, the communication broke down almost entirely.

If the number of vessels be 10, this would give a chain of 350 miles, and if 20 minutes be taken as an average signal time, a message should be passed in 3 hours 20 minutes, or at the rate of about 100 miles an hour.

Wireless chain work, however, has not proved very reliable in our Navy, and an admiral would be fortunate if he could rely on a communication rate of 100 miles an hour for distances over 200 miles. The greater the number of vessels the greater is the chance of a fault, and in experimental chains with more than six vessels disposed 40 miles apart, vessels are found steaming considerable distances to get in touch. The designers of a chain scheme may chafe at such delay, but they have to accept the fact.

On one occasion it took 8 hours to cover 190 miles.
" " " 11 " " 145 "
" " " 18 " " 200 "

These delays may be attributed to:—

Unintelligent operators and lack of interest.
Undigested schemes.
Want of interest.

A chain of 10 ships 40 miles apart ought to be able to send messages easily at 80 miles an hour; but the intelligence level has not yet reached this height.

A wireless chain would be a requirement of occasional rather than permanent necessity. It could not be relied on to keep in good working order for long in hostile areas, such as the Mediterranean, and it would be doubtful whether a stoppage of signals was due to a working fault or a chain rupture by hostile cruisers.

Chains are very exposed to attack, and should be in sections of five, with an armoured cruiser in charge of each, on which vessels could fall back if attacked.

Cruiser Divisions should be constantly exercised in quickly forming a chain of 150 miles, vessels spreading on either side of the armoured cruiser or leader of their division.

At present wireless chain exercises are not often practised because they are exploited on too large a scale, covering a distance of 300 to 400 miles. Chain work cannot be reliable unless it is constantly practised in peace, and unless it is found thoroughly reliable in peace an admiral will not waste all his cruisers on it in war.

Any attempts to send messages over 400 miles have ended in a fiasco, and at present no one takes much interest in the subject of rapid chain forming. The operators in small cruisers are usually signalmen, and they are often found deficient in executing a fleet scheme.

Scouting.

Wireless telegraphy has proved much more successful in scout work within 100 miles of a fleet than in chain work. A message can usually be received from 80 miles ahead in about $\frac{3}{4}$-hour. Co-operation and intelligent chronometry are necessary to prevent ships interfering with one another.

The flag-ship should call up wireless scouts in succession at stated intervals.

The number of ships permitted to call up the flag should be very limited, and they should be only allowed to do so in the case of urgent enemy signals.

All signals should be code, which should be brief and suitably drawn up for particular kinds of work.

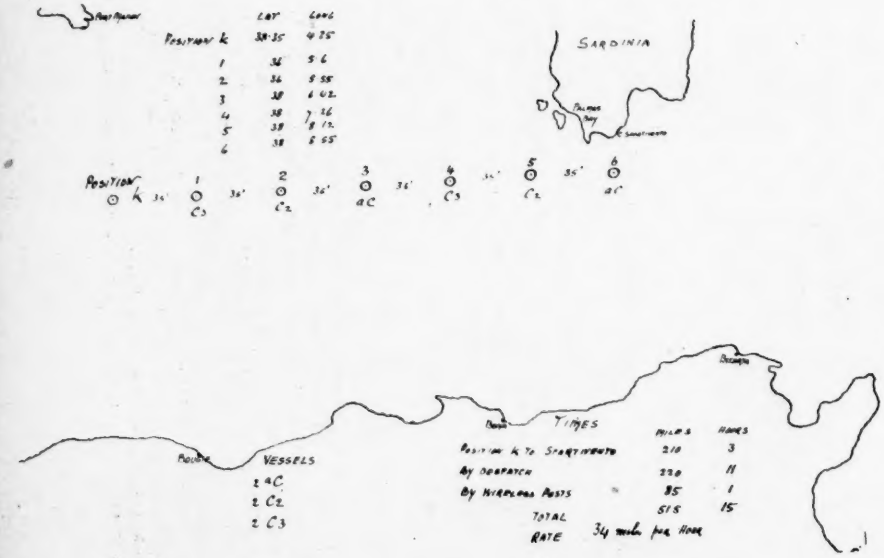
Information Posts.

Land stations can usually be depended upon to maintain communication with a reliable ship at 60 or 70 miles, and such a ship should be stationed off naval bases to receive wireless messages from despatch vessels.

Blocking.

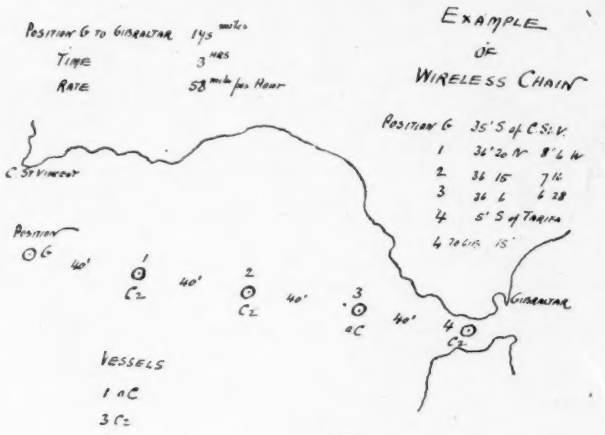
The use of wireless telegraphy to block an enemy's signalling should be resorted to within wireless distance of an enemy's port if necessary; but when in touch with a hostile fleet it would probably be advisable simply to take in their signals, which, growing weaker or stronger, may indicate their approach or withdrawal. Wireless chains have been successfully used in French Manœuvres.

Plan 2.


Position K
Lat
Long
38·35
9 25
1
34
5 6
2
34
9 55
3
38
6 02
4
38
7 46
5
38
8 12
6
38
8 55
SARDINIA
Palma Bay
Position
K
1
2
3
4
5
6
C3
C2
aC
C3
C2
aC
VESSELS
2 aC
2 C2
2 C3
TIMES
Miles
Hours
Position K to Starting Point
210
3
By Despatch
220
11
By Wireless Posts
85
1
Total
515
15
Rate
34 miles per Hour

EXAMPLE
OF
WIRELESS CHAIN AND DESPATCH
COMMUNICATION
SICILY
MALTA WIRELESS VESSELS
M1 34 34
M2 34 56
C2
C3
M1
M2
Malta

Plan 2.



III.

STRATEGY.

Abbreviations.

aC.	=	Armoured Cruiser.	Fl.	=	Flashing.
B.F.		Battle Fleet.	K.		Knots.
B.		Battle-ship.	L.C.		Lookout Centre.
C_1		Cruiser, 1st Class.	M.		Miles.
C_2		,, 2nd ,,	M.H.		Masthead.
C_3		,, 3rd ,,	W.P.		Wireless Post.
C.C.		,, Centre.			

Our Navy a century ago felt and threw back in confusion the force of a European war. It stands and looks down from a height of four centuries upon its old records and traditions and on the new Navies springing up around it. In deciding upon our strategic policy, these traditions must not fetter us. There is a favourite shibboleth which is constantly repeating that the principles of strategy are unchangeable, and that the blockade strategy of 1800 is more or less applicable to modern times. Correct strategy will not be built up from the past or by shuffling on to St. Vincent the onus of any mistakes we make. The first requisite is a thorough grasp of the powers and limitations of the weapons, forces, and instruments which we will have to use; then to evolve trial methods which can be beaten into practical shape by manœuvres and constant practice. Over-refinement and multiplication of orders are only one degree better than ignorance. Ordinary intelligence, sea experience, and a keen war interest are the best pillars of fleet strategy. The study of past campaigns stirs the imagination, but the changes which modern science has introduced are so great that it would be dangerous to take the strategy of the past as any guide to the present, or to assume that because St. Vincent and Nelson blockaded the enemy's ports in 1805, our admirals are to follow suit in 1903. Strategy or the correct disposal of our forces depends chiefly on speed and communication, factors which have entirely altered in the last 30 years, and so great have been the changes, that no similar development exists in history to guide us in adjudging the relations between the old

and the new. We must strike deeper ground than St. Vincent's strategy, and trust to the innate faculties of discipline, energy, determination, and intelligence. These are the fixed stars, and the fundamental alphabet of victory. The principles of strategy must be hammered out anew as instruments change.

Strategic Methods.

The opening moves of a campaign may be classified as:—

A. Blockade strategy.
B. Position strategy.
C. Base strategy.

These are the radical forms of strategy, and are capable of combination; but the features of one will usually predominate and colour the campaign. The opening move and counter-move may be immediately decisive.

BLOCKADE STRATEGY.

The enemy's posts are invested as closely as torpedo conditions will permit with the object of:—

Gaining touch with his fleet.
Bringing it to action.

A blockade may be a:—

Main blockade, in which the main fleets are opposed to one *another.*

Secondary blockade, in which a detached squadron is held in *check.*

T.B. blockade, in which T.B.'s are being blocked up.

We will discuss the features of a main blockade.

Principal Dangers to a Blockading Force.

1. Concerted action between two blockaded squadrons, resulting in a sudden and combined attack. Steam renders this simple move much easier, more certain, and swifter than it was in the old-time blockade.
2. Attack from T.B.'s and S.B.'s.

Disadvantages.

1. *Weather disabling small craft far from their base.*
2. Distance is probably considerable, and communication with base, which is an essential in modern war, will be correspondingly slow, unless a submarine cable is laid.
3. Communication track open to T.B. attack.
4. Blockaded squadron can exercise daily outside their harbour (if possessing S.B.), *and choose their own time for coming out complete with coal, and fully prepared for battle.*
5. Enemy can adopt waiting policy, endeavouring to cut off units, and gradually weaken the blockading force by constant night attacks.

Special Matters.

Temporary base is required for small craft to coal and take shelter.
Communication of important news from base must be arranged.
Coaling arrangements made.
These matters will be considered further on.

Distance.

If we look at dangers to a blockading force:—

1. Can be partially met by lying some distance off, out of sight of the port, in a position unknown to the enemy. A combined attack could not then be made so suddenly.
2. Is partially met by withdrawing to a certain distance. A T.B.'s range of action at 10 knots is over 600 miles; but a certain amount of safety can be ensured by:—
   - *a.* Lying out of sight of harbour, so that fleets cannot be located without a previous search.
   - *b.* *Lying outside sphere (D)' of an ordinary night cruising, T.B., which leaves its port at dark; intending to return by dawn.*

If D be the distance in miles, v speed of T.B., h the number of dark hours, then—

$$D = \frac{vh}{2}$$

Taking v = 18 knots, h = 10 hours, D = 90 miles, and *we may consider this as roughly the distance at which a blockading fleet should lie.*

BLOCKADE WORK.

Blockade work may be divided into:—

- *a.* *Enemy observation.*
- *b.* *Keeping touch with enemy if sighted.*
- *c.* *Communication between enemy observers and Battle Fleet.*
- *d.* Communication between Battle Fleet and base.

a. *The enemy may be observed by:—*

1. Lookouts.
2. Patrols.

Lookouts lie close up to a port and watch the entrance. Patrols lie further out and trust to intercepting the enemy on his course.

b. *Touch may be kept with the enemy by cruisers in:—*

1. Chain.
2. Group.

c. *Communication between enemy observers and Battle Fleet* may be maintained by:—

1. Despatch.
2. Signals.
3. Wireless.

d. *Base communication may be by:—*

1. Despatch, periodical and special.
2. Wireless.
3. Cable.

Duties and Formations.

The above items of blockade work are distributed among different classes of vessels according to their suitability. Most blockade plans will coincide more or less roughly with the following sketch, which will serve as a ground work for consideration:—

Rough Sketch.

—	Duty.	Formation.
Smaller Vessels Close in 2 to 10 miles.	Lookouts.	Single or groups, stationary or patrolling.
Cruisers Medium Distance 15 to 40 miles.	Patrol work.	Single or pairs. Areas or Lines, Circumferential or Radiating.
	Ready to keep touch.	Cruising Formation, ready to form chain.
Battle Fleet 80 to 100 miles.	Bring to Action.	Stationary or Cruising. Battle Formation or Spread.

We will proceed to consider the work of lookouts, and compare the method of placing cruisers in patrol formation with that of keeping them in hand ready to maintain touch with the enemy.

Lookouts.

Lookouts watch at the actual entrance of the port; this method is usually successful in manœuvres. These vessels must be small, and as little visible as possible. At night they should be stationary, and lie under the lee of land; on a dark night they would not be seen more than 200 yards off. By day lookouts would lie 5 to 10 miles from the entrance; by night 1 to 2 miles. Destroyers are suitable for the work, as they:—

Are not easily seen.
Can run from the fastest cruisers.
Can engage T.B.'s if necessary.

Lookouts work best singly; but they should have a reserve within supporting distance, otherwise the enemy, coming out in groups of three or four, would attack and disable them.

Patrols.

Patrolling consists in cruising on laid down beats. A lookout is intended to sight an enemy leaving port. A patrol trusts to intercept him on his course. *Patrols must be some distance from an enemy's port in order to ensure a certain amount of safety from T.B. attack and S.B. at dawn.*

Patrols may be:—
a. Single.
b. Pairs.

They may patrol:—
a. Areas.
b. Lines. Circumferential or radiating.

Patrol formations have these great disadvantages:—

1. *They require a large number of vessels* necessarily fairly close to a port, and so exposed to T.B. and S.B. attack. T.B.'s would only have to proceed out of port, and sooner or later would meet a patrol. The moral effect of two or three cruisers sunk at the opening of a campaign, with nothing to show for them, would be considerable.

2. The very fact of a number of vessels sighting the enemy leads to conflicting information.

3. *Patrol formations are not adapted to concerted action*, and patrols are not able to support one another effectively if attacked.

4. A cruiser line prepared for battle might easily issue out and envelope the flank patrols.

5. Communication between patrols is usually slow.

Methods of Patrol.

Patrols may be single or in pairs; single patrols are preferable. When scouting, ships should be in pairs in order that one may carry news to the Admiral; but this does not apply to blockade patrols, as an Information Centre should be placed in rear, to which all news would be quickly carried.

Patrol limits may be divided into areas or lines. Area patrols permit of freer action. *The course of the patrol ought to be at 45° to the probable course of the enemy* in its particular area.

Lines tend to be restrictive. Circumferential patrols are chords or arcs of a semicircle drawn round a port. Radiating patrols are radii of such a circle.

The defect of a patrol system is the number of cruisers necessary to make it absolutely effective.

In Circumferential Patrols, if:—

N be the number of patrols,
D Distance from post,
Y Length of beat,
Z Range of vision,
L Length of enemy's fleet,
V Speed of „ „
V' „ „ patrol,
K Ratio of arc of patrol to π,

Then—

$$N = \frac{\pi KD}{Y}$$

$$Y = \frac{L + 2Z}{2V} \times V'.$$

Now D must be a reasonable distance if C_2 are being used.

Let $D = 30.$
$Z = 4.$
$L = 1{\cdot}5.$
$V = 15.$
$V' = 18.$
$K = 75.$
$Y = 5{\cdot}7$
Then $N = 12.$

This is for an arc of patrol of 135°, and is probably twice as many as could be available.

For Radiating Patrols—

$$N = \frac{K \pi D}{2Z}$$

$$= 9.$$

This is not so many; *but four miles is the maximum for Z, and is more than double the range of vision on an ordinary dark night.*

The following table gives the number of patrols required for different values of D and Z:—

RADIATING PATROLS. *Plan 3.*

Number Required for Arc of 180°.

DAY.

Distance from Entrance.	Range of Vision.		
	5′	10′	15′
10′	3	2	1
15′	5	2	2
20′	6	3	2
25′	8	4	3
30′	9	5	3

NIGHT

Distance from Entrance.	Range of Vision.			
	1′	2′	3′	4′
10′	15	8	5	4
15′	22	12	8	6
20′	30	15	10	8
25′	33	19	13	10
30′	—	—	15	12

Take an ordinary case, in which range of vision is 2 miles, and 8 cruisers are available, the distance of patrols from enemy's port would be 10 miles, which would render them very liable to T.B. or S.B. attack.

If the patrols are withdrawn to a greater distance we must have:—

a. *More cruisers,*
or *b.* *Increased distance apart,*
or *c.* *Decreased horizon arc.*

Cruisers cannot be created all standing; they must be previously built, and it is not sound policy to expend more than a certain percentage of building money on the secondary units of a fleet unless the necessity is evident.

A number of cruisers would be required for:—

1. *Wireless chain.*
2. Detached work.
3. Fleet lookouts.

The cruiser force (modern) available for Mediterranean would be, approximately:—

aC.	C_1.	C_2.	C_3.
6	7	10	8

aC. and C_1 could not be used close up to a port, and probably not more than $6C_2$ and $4C_3$ would be available for patrols. If a patrol system is not effective, it is preposterous to risk cruisers in such work. But its efficiency becomes dubious if *the range of vision be taken as over 2 miles*; and to render it effective we must pour our cruisers into a position where they are very exposed to T.B. attack, in order to maintain a clumsy non-battle formation, in which they fetter rather than assist one another. The best counter policy for the enemy to pursue would be to stay a month in port with a swarm of boats out every night, for he could rely on sinking at least one cruiser per week. The Mediterranean Manœuvres of 1902, when some cruisers were crossing one another with conflicting news, some afraid to leave their beats, while yet others left their beats with no definite object, finally condemn the use of cruisers as patrols.

CRUISERS IN BLOCKADE.

As patrol formations are not worth the risk entailed when blockading a first-class port, the cruisers, 1st and 2nd class, *should be kept together and well in hand under their Admiral, ready to maintain touch between the escaping enemy and the Battle Fleet.* News should be immediately conveyed to the cruiser centre from the lookouts and the information posts, and a cruiser force would be immediately despatched to keep touch with the enemy. This may be done by *group or chain formation.*

Group.

A group of cruisers keep touch with the enemy, and one is despatched at intervals to carry news to the Admiral.

Advantage.

A cruiser group requires a cruiser action to drive them off.

The enemy will not know direction of Battle Fleet, as cruisers in steaming off will steer a false course.

Disadvantages.

If Admiral is some distance off, *communication becomes slow and uncertain.*

As cruisers are successively despatched, the group becomes weaker.

It is difficult to keep a cruiser group informed of Admiral's movements; the position of the group is not certain, and its movements depend upon the enemy.

CHAIN.

The cruiser force form a linking chain between the enemy and Battle Fleet.

Advantages.

Communication is much quicker and touch is constant.

Disadvantages.

Requires practice to form quickly.

Head is vulnerable, as the enemy will attempt to drive it off. The head should consist of aC. Destroyers or T.B.'s may be sent round at dusk to attack the chain in flank.

Direction of the chain informs enemy of bearing of Battle Fleet.

The chain may be broken by an enemy's cruiser group attacking the link cruisers; but it must be remembered that the cruiser force of foreign Navies is limited, and if the chain is not more than 250 miles in length, a link cruiser sighting the enemy 15 miles off would have time to reach the chain head, where there is an armoured cruiser force, or the Battle Fleet, before being brought to action. The chain would be broken; but even if the cruiser attacked had not time to signal the hostile approach before being blocked, the stoppage of the half-hourly "Chain correct" signals would indicate the fact to the chain head and the Battle Fleet, whence a reinforcement could be sent. If the enemy possess a strong cruiser force, chains should be limited to 200 miles in length.

In spite of these disadvantages the chain method is advocated, and *has been used very successfully in French manœuvres.*

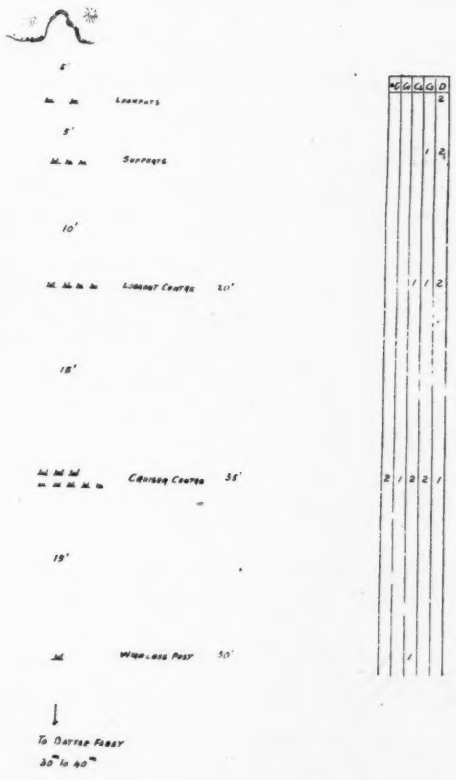
BATTLE FLEET.

The Battle Fleet should be in night battle-formation, 4 cables apart, steaming slowly along a 5 or 10 mile base. A fleet searching for a smaller fleet by day can afford to spread; but it is quite possible for two fleets to come suddenly into contact *at night or at dawn with little previous warning.* (Manœuvres: Channel, 1900; Channel, 1901; France, 1901.) In the French Manœuvres of 1901, a blockading force spread in a long extended line, found the blockaded squadron 4,500 yards off at dawn in battle formation. The result in war would have been a disastrous defeat.

Steam means rapid attack, and though a formula of m and n may show that a fleet spread has ample time to form, it is one of those cases where formulæ do not apply. The Battle Fleet in battle line is a good solid rule for modern war.

PLAN OF BLOCKADE.

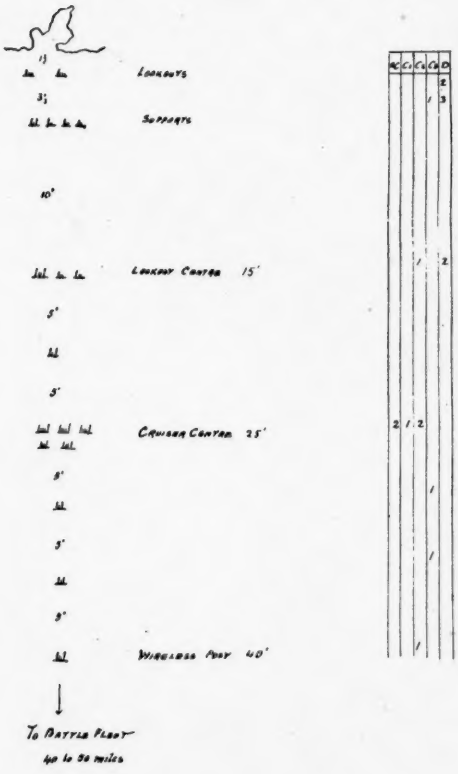
DAY. *Plan 4a.*



NOTE.—For explanatory matter of Blockade Plans, see p. 373.

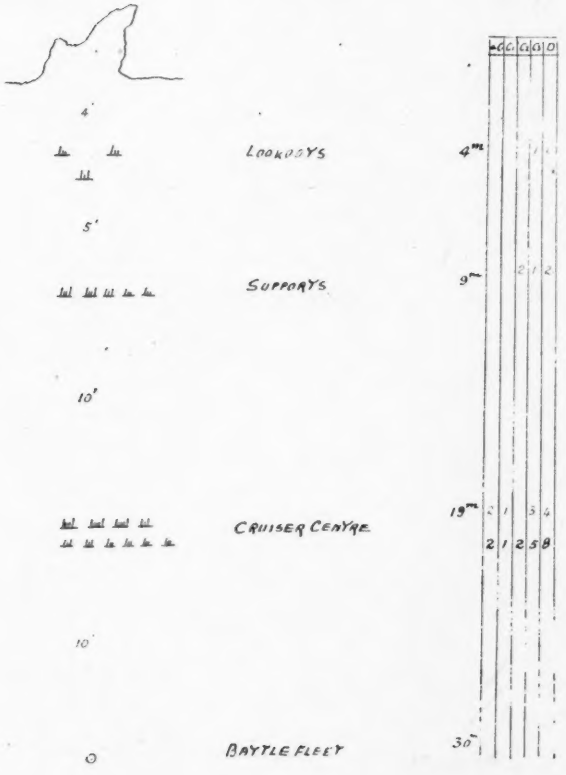
PLAN OF BLOCKADE.

NIGHT. *Plan 4a.*



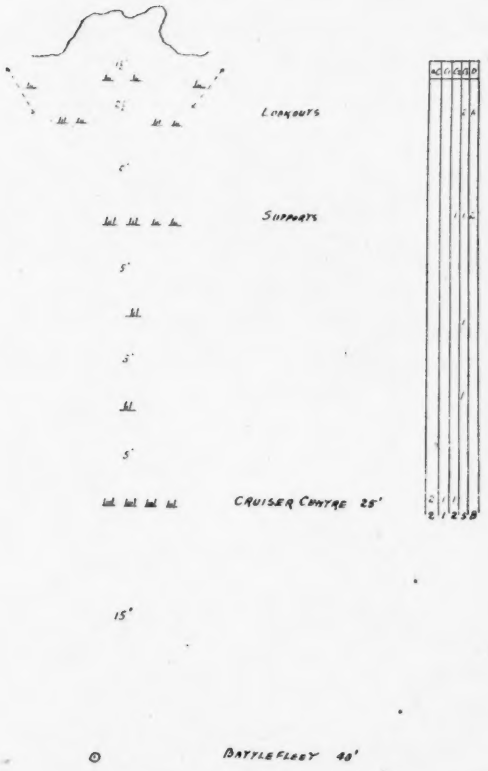
NOTE.—For explanatory matter of Blockade Plans, see p. 373.

PLAN OF CLOSER BLOCKADE.

DAY. *Plan 4b.*

NOTE.—For explanatory matter of Blockade Plans, see p. 373.

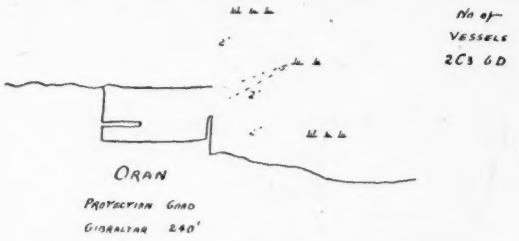
CLOSER BLOCKADE.

NIGHT. *Plan 4b.*

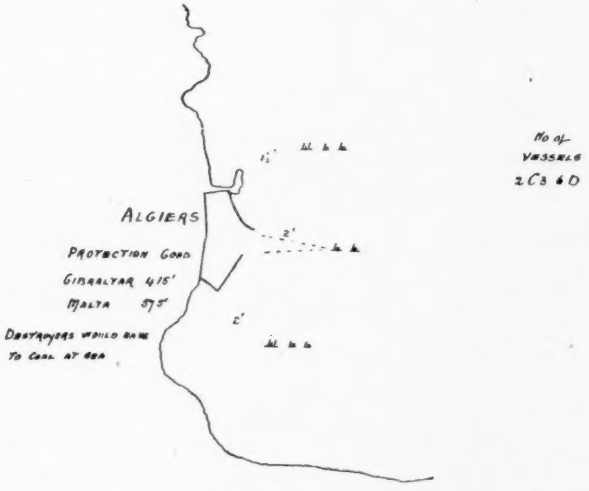


NOTE.—For explanatory matter of Blockade Plans, see p. 373.

SKETCH OF T.B. BLOCKADE. *Plan 4c.*



METHOD.—Destroyers close in, and flash search-lights on entrance at intervals.



DESTROYERS. *Plan 4d.*

LIMIT DISTANCE FROM BASE.

DATA.

Coal Cap.	...	80 tons.
Passage Speed ...	...	12 kn.
Tons per Hour ...	...	·8
Coal Reserve (4 hrs. at 25 kts)		16·8 t.
Time to Coal ...	...	24 hrs.
Speed on Blockade...	...	10 kn. = ·66 per hr.
Tons per Day ...	...	15·8

TIME ON BLOCKADE.	DISTANCE TO BASE *Must not Exceed*
24 hrs.	... 350 miles.
48 hrs.	... 240 „

NEW DESTROYERS—COAL CAP. 130 TONS.

24 hrs.	... 480'
48 hrs.	... 370'

PLAN OF MODERN BLOCKADE.

If in spite of its inherent disadvantages, Blockade Strategy is adopted, the following plan is proposed:—

1. *Destroyers are stationed as lookouts,* with supports in rear. By day they would be 5 miles off the entrance; by night 1 to 2 miles. Their duty is to observe the enemy, not to attack T.B.'s coming out.
2. *1C$_2$, 1C$_3$, 1D form a lookout centre,* 20 to 25 miles off the entrance.
3. *The main body of cruisers* are stationed at a cruiser centre, 30 to 40 miles off, ready to maintain touch with the enemy. Chain method is advocated; but one or two cruisers might be detached to patrol on likely arcs.
4. *1C$_2$ forms a wireless post,* 50 miles from the entrance.
5. *The B. Fleet, 80 to 100 miles off,* steams at 5 knots in battle formation, 3 or 4 cables apart, along a 10-mile base.

Day Positions.

Lookouts are 5 miles off the port.
In rear of the lookouts 5 miles are the supports.
In rear of the support 10 miles is a lookout centre (L.C.).
In rear of the L.C. 15 miles is the Cruiser Centre (C.C.).
In rear of the C.C. 15 miles is the Wireless Post (W.P.).

Night Positions.

Lookouts are 2 miles off the port.
Supports are 3 miles in rear of lookouts.
Lookout Centre is 10 miles in rear of supports.
C.C. is 15 miles in rear of L.C., with 1C thrown forward, 5 miles towards L.C., and 1C thrown back 5 miles towards W.P.

W.P. is 15 miles in rear of C.C.

NUMBER OF VESSELS.

Day. *Table 8.*

Distances.	aC.	C$_1$.	C$_2$.	C$_3$.	D.
5′ Lookouts					2
5′ Supports				1	2
10′ Lookout Centre			1	1	2
15′ C. Centre	2	1	2	2	1
15′ Wireless Post			1		
Number	2	1	4	4	7

NUMBER OF VESSELS.

Night. *Table 8.*

Distances.	aC.	C_1.	C_2.	C_3.	D.
2′ Lookouts					3
3′ Supports				1	3
10′ Lookout Centre.			1	1	2
15′ C. C.	2	1	2	2	1
15′ Wireless Post			1		
Number	2	1	4	4	9

COMMUNICATION.

News may be transmitted by the following methods:—

Method.	Signal Range in Miles.	Signal Time in Mins.	Rate per Hour. Miles.
Despatch			20 to 25
Signals — Distant	15 to 18	15	60 to 72
Signals — M. H. Semaphore ...	10 to 15	10	60 to 80
Signals — Flashing	5 to 20	5*	60 to 240
Wireless	50	5*	600 (in practice about 40′)

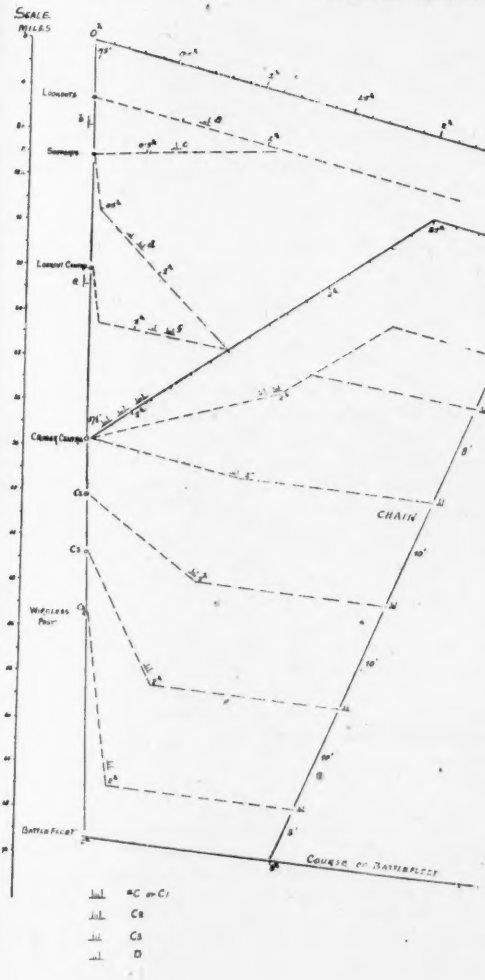
* Brief and simple Code.

Wireless will probably be blocked within 50 miles of the port. The range of distant signals may be taken as 15 to 18 miles on a clear day; that of mast-head semaphore 10 to 15 miles, and flashing 5 miles; but with a cruiser arc lamp, 20 miles. The rate per hour is $\frac{60}{t} \times$ range, where t = minutes to make a signal. *Rendezvous to which news is to be transmitted must be clearly laid down.* The keynote of any communication system is that all vessels should be acquainted with the positions of the C. Centre and Battle Fleet for any hour of the day or night.

The whole touch and communication scheme hinges on this. Lookouts and supports are practically the same body; but it is not a good plan to have too many vessels close up to the port. The lookout centre is intended to receive news from the lookouts and transmit it, permitting them to return at once to their posts, or if a fleet has sailed to follow it. *All important news should be safe-guarded by despatch.*

BLOCKADE TACTICS.

Cruiser Chain. *Plan 5.*



Positions.

	aC	C_1	C_2	C_3	D
Lookouts ...					2
Supports				1	
Lookout Centre ...			1		2
Cruiser Centre ...	2	1	3	3	
Wireless Post ...			1		

Times.

0h Enemy starts 16 knots.
0.8h Head of Chain starts 21 knots.
2h Chain formed. Battle fleet starts at 16·5 knots.

Instructions.

Lookouts—
1D (a) follows enemy.
1D (b) to Supports, then to Flag.

Supports—
1D (c) follows enemy.
1C_3 (d), 1D close on Lookout Centre, then shape course to join Head of Chain.

Lookout Centre—
1D (e) to Flag.
1C_2 (f), 1D close on Cruiser Centre, then join Head of Chain.

Cruiser Centre—
Cruisers form Chain. 1C_2, 2C_3 are kept stationed 5 miles apart, towards Battle Fleet.

Battle Fleet must not start till Chain is formed.

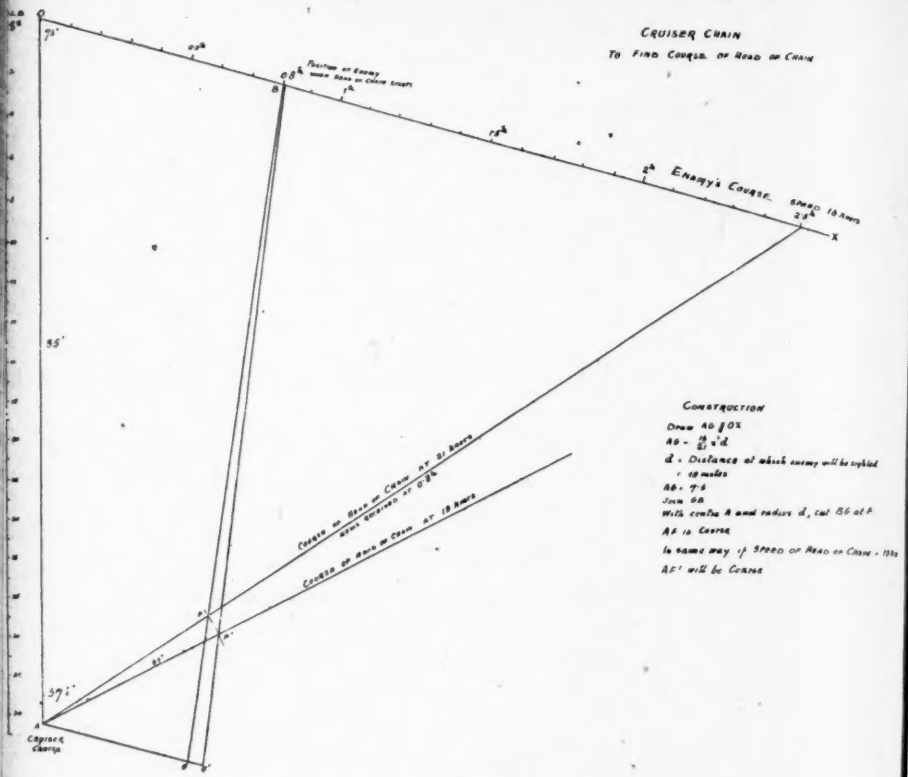
Chain.

Length, 60 miles.
Links, 6
Distance apart, 10′.
Time to pass signal, 1h. 10m.

Vessels.

	aC	C_1	C_2	C_3	D
Head of Chain ...	2	1	1	1	2
Links			3	3	
Detached ...			1*		4*

* 1C_2 at Wireless Post.
2D following enemy.
2D despatched to Flag overtake about 4·75h. at 22 knots.


CRUISER CHAIN
TO FIND COURSE OF HEAD OF CHAIN
ENEMY'S COURSE
SPEED 18 KNOTS
CONSTRUCTION
COURSE OF HEAD OF CHAIN AT 21 KNOTS
COURSE OF HEAD OF CHAIN AT 18 KNOTS

COMMUNICATION SCHEME (PLAN 5).

Abbreviations.

Sig.	= Signals.	W.P.	= Wireless Post.
Desp.	Despatch.	Dist.	Distant.
L.C.	Lookout Centre.	Fl.	Flashing.
C.C.	Cruiser Centre.		

Communication scheme is as follows:—

BY DAY. *Table 9.*

—	Distance.	By	Time in Hours.
Lookouts to Support	5′	Desp. Sig.*	·25
Sup. to L.C.	10′	M. H. Sem.	·25
L.C. to C.C.	15′	Dist. Sig.	·30
Head of Chain starts			·30
C.C. to W.P.	15′	Dist. Sig.	·30
W.P. to B.F.	20′	Wireless	·25
Battle Fleet starts			1·35

* Ship closing at full speed and signalling at same time.

BY NIGHT.

—	Distance.	By	Time in Hours.
Lookouts to Support	3′	Fl.	·2
Sup. to L.C.	10′	Fl.	·3
L.C. to C.C.	15′	Fl.	·3
Head of Chain starts ...			·8
C.C. to W.P.	15′	Fl.	·3
W.P. to B.F.	30′	W.	·25
Battle Fleet starts			1·35

NIGHT SIGNALLING.

As the enemy will probably try to escape by night, night signalling is a matter of primary importance. The principal methods of signalling by night are:—

Morse Flashing.
Rockets.
Wireless.

False signalling by the enemy is a contingency to be guarded against. The first necessity is a good cipher code. Other nations do not ordinarily use Morse flashing at night; it is a system which requires a good deal of practice to work successfully, and a signalman is not thoroughly efficient in it for two or even three years. Accordingly with a good code, *Morse flashing ought to fulfil all requirements.* To imitate an enemy's signals is easier in peace manœuvres than in war, when the attempt would be more likely to meet with failure than success, unless the systems ordinarily used are similar. The betrayal of one's own position by flashing is a point which must be disregarded if the news is important; but the risk of this might be greatly lessened by suitable apparatus. War signalling is a very important matter, and does not receive the attention it ought. A greatly needed requirement, and one which could be very easily fitted, is some form of shade fitted to a lamp which would obscure the light over more than a certain arc, say 15° to 30°. This is so simple and necessary that some captains would have such a shade immediately fitted to all signalling lamps in war time. But it is a good maxim not to expect anything in war which has not been previously tried and constantly used in peace. It is one of those unlucky bits of apparatus which anyone could design, whose necessity is obvious, whose existence is always assumed, but which is rarely actually fitted. The principal lamps used in the Service are:

Table 10.

Nature.	C. Power.	Range in miles.
Masthead, Scott's	75	3 to 5
„ Multiple Fibre	64	3 to 5
Cruiser Arc	2,000	20
Gravity	50	2
Deck	16	1

The masthead lamps are fitted on the foremast-head, and can be read 3 to 5 miles off. In war it would be better to have them with

shades and training round a narrow platform about 4 feet above the upper top. The cruiser arc lamp is only fitted in a few ships, and is a very powerful lamp, easily visible 15 to 20 miles. It is enclosed in a box, and is too heavy to carry about easily.

All ships ought to be fitted with this type of lamp, training round the foremast, and fitted with side shades. The deck lamp is a large, clumsy, portable lamp. The gravity lamp is a small lamp, chiefly used for harbour work.

The hand lamp is a neat candle lamp, suitable for shore and boat work. The defective signalling in the Argostoli blockade (Mediterranean Manœuvres, 1902) was chiefly due to the masthead lamp not being fitted with the shade mentioned above. As this lamp shows all round, *its use was forbidden.* This lamp is the principal method of signalling, and is readable 3 to 5 miles off. The veto on its use handicapped the signalmen, who were reduced to using the deck lamp, which is not so easily discernible, and has a smaller range (1 to 2 miles). Rocket signalling is another method which might be greatly improved. A rocket bursting 1,000 feet up can be seen by the observer 30 feet high, 50 miles off. *What is required are large 3 or 4 lb. rockets, carrying different combinations of coloured stars.* The combinations of four colours—red, green, blue, and white—taken 2, 3, and 4 at a time, would admit of 60 signals. Now, 47 signals would be ample, as in the following table:—

Table 11.

	Signification.	No. of Signals required.
Lookouts	Vessels leaving port	1
	Battle-ships „ „	1
	Cruisers „ „	1
	T.B's. „ „	1
	Course	15
	Time and Number	10
Touch	In touch with enemy	1
	Battle-ships sighted	1
	Cruiser „	1
	Vessels „	1
Admiral	General Recall	1
	Formation	6
	Admiral is proceeding	1
	Distinguishing Signals	6
	Total	47

Communication within 50 miles of the enemy may be said to hinge on the following points:—

1. *Vessels in definite positions.*
2. *A powerful 20-mile lamp, showing over an arc of not more than 30°.*
3. *A simple and brief blockade code.*
4. *A good system of rocket signals.*
5. *All important news safeguarded by despatch.* Outside 50 miles a good system of wireless telegraphy is necessary.

(To be continued.)

THE MILITARY EDUCATION OF OFFICERS OF THE AUXILIARY FORCES.

By Major W. H. AMES, 2nd Volunteer Battalion Oxfordshire L.I.

Thursday, 3rd March, 1904.

Colonel LONSDALE HALE, late R.E., in the Chair.

The CHAIRMAN :—I beg to introduce to you Major Ames, who will now give us a lecture upon "The Military Education of Officers of the Auxiliary Forces." Increased interest attaches to the lecture, from the fact of this being the Prize Essay of the "Q" Club.

LECTURE.

THERE are two methods in which the subject of this paper may be treated: the one, the theoretical method, which consists in assuming a *tabula rasa*, and laying down the principles and working out the details of an ideal system of education for the officers of an Auxiliary force ideally organised and equipped, and serving under ideal conditions; and the other, the practical method, which consists in taking things as they are: in examining the defects in the present system, with a view to discovering their causes, and pointing out remedies which can be effectually applied within the limitations of the present system. It is the latter method which will be adopted in this lecture, for although the former, like all ideals, has its value in setting up a standard, yet the aim of the "Q" Club in instituting this competition was undoubtedly to obtain if possible some solution of the practical difficulties that surround this question. The problem is not so much "What ought officers of the Auxiliary forces to know?" for no one will deny that officers of the Auxiliary forces should have a practical knowledge of tactics, military engineering, topography, organisation, and military law; but rather "How is the necessary knowledge of these subjects to be instilled into them?" In order to satisfactorily answer the latter question it is necessary to enquire:—

a. Of what class of men do the officers of the Auxiliary forces consist, and what time can they spare for study?

b. What opportunities and inducements have they at present to acquire the requisite military knowledge?

c. Do they make full use of the opportunities they have, and, if not, how can they be induced to do so?

d. What further opportunities should be given?

A. The officers of the Auxiliary forces are men who differ widely in circumstances, both in the matter of wealth and leisure; there

are a few who have wealth and leisure, and the acquisition of military knowledge by this class is simply a question of the keenness of the individual. But of by far the greater number it is true to say that they are professional or business men—men whose income is dependent to a great extent upon their daily work—and such men can only give a minor portion of their time to any military duties that they may undertake; and the claims of the civil occupation must always, in time of peace, come first and override the claims of the military duties if they happen to conflict. This is a fundamental axiom that must always be borne in mind when dealing with Auxiliary forces. It is occasionally lost sight of, but always reasserts itself by rendering impossible the working of the scheme which has neglected it.

If an officer of the Auxiliary forces is a professional or business man, it follows that his time is fully occupied by his civilian duties between the hours of 9 a.m. and 6 p.m., except, perhaps, on Saturdays. One must note, however, that there is a certain interval in these hours during which he is travelling to and from his work which can be utilised readily for purposes of military study. The text books are not bulky, and can easily be read in the omnibus or train, and substantial progress can be made in a subject by using these few spare minutes. The writer can speak from experience, for he prepared himself for all the voluntary examinations largely by this method, and still uses it for the purpose of keeping up and extending his knowledge. As a matter of history, it was put into his head by reading the life of Sir Richard Burton, who always carried a book about with him when learning a new language, and consulted it whenever he had a spare moment.

But apart from these few moments salved from the maelstrom of business, a man has certain other claims upon his leisure; social duties and other pursuits take their share, and if married, *domus et placens uxor* also absorb their portion. It is only a part of his leisure that he can be expected to devote to military pursuits, and perhaps it is not putting it too low to say that one evening and an afternoon a week is as much as can be expected from him for these purposes. But then this small amount of time is not wholly available for study; the summer months are occupied with company and battalion training, and in the winter there are various administrative duties to be performed and instruction to be given by the energetic officer, perhaps absorbing half his military time. It appears, then, that the time available in the course of a year for study by an Auxiliary officer of such matters as are comprised in subjects *c*, *d*, and *g* is very limited, and may perhaps be laid down as an average of about two hours a week during the winter months.

B. Having arrived at this conclusion, we now pass on to the consideration of the next question: as to the opportunities and inducement the Auxiliary officer has to make use of this time. And here again the circumstances of different officers differ very widely. It is open to all to study the text books by themselves, and there are many admirable text books dealing with military subjects obtainable at a very moderate price; but unaided and solitary study is apt to become dreary and tedious, and the student soon feels that he is expending a great deal more labour than he need, and that if he had only some one to give him a hand, or help him over some of his initial difficulties, he would obtain better results from less labour. There are many crammers who impart instruction by correspondence; this is an excellent

method in itself, and the student has his mind directed to the cardinal points of his subject by the shortest and best routes that experience and the art of teaching have discovered; but this instruction cannot be obtained for nothing, and it may be a serious addition to the already heavy expenses of an officer who is not in receipt of a large income.

In some large centres there are excellent Military Societies, which provide lectures on subjects for the voluntary examinations, but these are only available for those who live in close proximity. It is too much to expect of Auxiliary officers that they can travel any distance from their homes for the purpose of attending those lectures, however useful they may be. You cannot draw the Auxiliary officer from a distance to the means of education.

This is an exhaustive list of the opportunities that an officer of the Auxiliary forces has to study these subjects, and it is a noticeable fact that there is not one single provision in the Volunteer Regulations which gives any official opportunity to the officer to receive instruction on these points. Officers are indeed allowed to pass the examinations, and they have the privilege, which is of real value, of taking one subject at a time; but there the matter officially ends. There is not any reproduction in even the most modified form of paras. 676, 677, 678 of the King's Regulations, putting the responsibility for the instruction of their officers on to commanding officers—an omission which is, however, strictly logical, as there is no obligation upon commanding officers to have any knowledge themselves of any of these subjects.

So much for the opportunities; and now what are the inducements to Auxiliary officers to take up any of these subjects? His promotion does not depend upon his attainments in this direction. The officer who has not passed in tactics is promoted equally with the officer who has, and no instance is known of an officer being selected for any special purpose because he has got the "Q." There are, indeed, the official inducements: the distinction of "Q" and the £1 10s. extra grant allowed for each officer who passes in tactics. Both these inducements have a good effect. The "Q" undoubtedly spurs on some men who have passed, say, in three subjects which are, perhaps, congenial, to tackle the outstanding uncongenial subjects and complete the series. That the extra grant for tactics is a powerful inducement is shown by the very large number of officers who pass in tactics and never go on to any of the other subjects.

These are the only inducements officially held out to officers to tackle any of these subjects, and it must occur to anyone that, although it cannot be said that these are not valuable inducements, which have their share of fruit, yet there is plenty of room for the introduction of many more, and at a later stage in this paper suggestions will be made on this point.

C. Following out the order laid down at the commencement, we now pass on to see whether the Auxiliary officers make full use of these opportunities and inducements. And it must at once be acknowledged that they do not; and this can be made plain by considering the fact that a very considerable number of officers pass in tactics. If they can pass in tactics, why not in the other subjects? And if they can overcome the difficulties created by the lack of opportunities for study in the case of tactics, why can they not do so in the case of military engineering and topography, especially in view of the fact that they must have dipped to a certain extent into the elements of these subjects

during the study of tactics? Again, the full use is not made of such lectures as are provided for officers in large centres by the various Military Societies. A striking example of this was furnished by the attendance at Colonel Brunker's lectures on "Staff Duties" during the first three months of 1902. The attendance grew small by degrees and beautifully less as the course went on; possibly some dropped off because they had not the necessary knowledge of tactics and other kindred subjects to follow the lectures; but anyone attending must have been struck by the very small number of officers who took the trouble to work out the schemes by which the lecturer illustrated his points.

The reasons of this apparent apathy are rather deep-seated and difficult to state in a concise form. It may be said to arise from two misconceptions of an officer's duty. The first consists in losing sight of the one real fundamental reason for the existence of Auxiliary forces at all; the possibility of war; the actual, bloody, grim, relentless, unforgiving day of battle, when two opposing forces join in strife with momentous issues hanging on the decision of the contest; a day when the penalty of a faulty manœuvre will not be a mild rebuke from a staff officer, and a repetition of the exercise, but rather the lives and the blood of the leader and the led. Too often this cardinal fact is lost sight of, and we hear of officers joining the Auxiliary forces as a hobby, and dropping out as soon as the hobby becomes irksome. The danger that lies in that half-hearted service is enormous It was not the spirit that animated the Volunteers of 1859; then the shadow of invasion was on the land, and every Volunteer who joined, was determined, according to his lights, to make himself efficient for the day of need.

The second misconception is one which is not confined to officers of Auxiliary forces, and to use the words of Marshal Saxe, it is "The belief that drilling troops alone constitutes the art of war." Important as drill is as a means to an end, it is too apt to be regarded as the end itself. Perhaps in former days the boundaries of perfection in drill and the art of war may have coincided more closely than they do at present, and thus the means and the end may have become confused. But however the tradition arose, it undoubtedly exists to a certain extent, at any rate among the older members, who are thereby led to consider that when they have mastered the drill and can give correct words of command they have done all that can reasonably be expected of them, and that the study of military science is unnecessary for them, although possibly useful for those in higher positions.

Constant examples of the effect of this misconception can readily be called to mind by any one with experience of Volunteers. One has seen worthy fellows wearing themselves out in endeavouring to make a line of skirmishers keep step, and we have all met the officer whose sole idea of outpost duty is to divide the picquet mathematically along the front allotted to him, and to post and relieve his sentries with all the formalities of guard mounting.

At this point it may be well to summarise the argument: The writer claims to have established that the opportunities and inducements to officers of the Auxiliary forces to study military science are not sufficient in themselves, but that at present officers do not make full use of such opportunities as are afforded them. These are the defects in the present system, and the remedy must be twofold; it must overcome the apathy on the one hand, and it must give increased

opportunities on the other hand. How is this to be done? Let us deal first with the apathy.

There are three great forces that can be brought to bear upon this:—

a. Immediate Personal Influence.—It is a remarkable fact that although very few officers have obtained the "Q," yet the regiments that can claim an officer with this distinction are fewer still; several regiments have more than one; enthusiasm is catching, and one enthusiast will inspire some of his companions with a portion of his enthusiasm; and, further, the higher the rank of the enthusiast the more influence he is likely to wield. If the records of the voluntary examinations were tabulated so that they could be critically examined, it is not too much to say that the percentage of officers passing one or other of these examinations is far higher in battalions where there is a "Q" than in battalions where such distinction does not exist. It is therefore desirable to have at the head of battalions field officers who have passed the voluntary examinations, or most of them; they can exercise a far greater influence on their subordinates than those who have not. The one can say to his subordinates: "I have managed to find time to pass in these subjects, and your circumstances do not differ so widely from mine but that you might do the same"; and the other can only say: "It is quite true, I have never taken the trouble myself; but I think it would be an excellent thing if you would do it." One is naturally chary of imposing greater burdens on Auxiliary officers; but seeing that field rank is rarely refused, but is indeed rather coveted, the writer ventures to suggest that promotion above the rank of captain should only be made in cases where the officer has passed in all three branches of subject (*d*). In order to avoid any immediate hardship the regulation might be framed so as not to become compulsory for, say, five years. Possibly the effect would be to diminish the supply of officers above the rank of captain, but it is doubtful if this would be so. A glance through the Army List shows very few vacancies in these ranks, and promotion has a wonderful attraction. In one battalion, of which the writer has personal knowledge, it was laid down that no officer would be advanced under paragraph 54 of the Volunteer Regulations unless he had passed in tactics, and a firm adherence to this principle has had a very good effect. There is a danger in arguing from the particular to the general; but if the same experiment has been tried on a small scale with success, there is a probability of its succeeding when tried on a larger—at any rate, there would then be an inducement to captains to study these subjects.

b. The Impressions of Youth.—If a boy's mind is directed from the first into the proper channel of ideas on this subject he will not fall a victim to the errors of tradition that have been referred to, and it is more profitable to try and mould the ideas that are in process of growth than to try and alter the shape of those that are already formed.

It is suggested, therefore, that this force shall be applied more than it is at present. A large proportion of future officers of the Auxiliary forces are now being educated at our great public schools, and at these schools there are usually extra subjects, of which boys can take up one or more, according to their personal choice, as part of the curriculum. It ought to be possible to add to this list a subject, called by whatever name may seem most suitable, which would

involve the study of the principles of tactics illustrated, as far as possible, by instances drawn from the annals of the British Army; a combined subject of Tactics and Military History; such a subject could be made very attractive to boys, and there should be no difficulty in finding a master holding a commission in the school corps who would be competent to undertake the instruction. One hears a great deal of drill in the national schools, with the object of rearing a generation which will be fit to bear arms; in the same way in the public schools something might be done, at any rate, to prepare the minds of the future officers for the instruction they should receive. Military societies might do worse than work out a scheme on these lines, and submit it to headmasters.

c. The Power of the Purse is the third great influence. The effect of the £1 10s. annual grant for tactics has been referred to above, and the money spent in extending this grant would be well laid out.

The grant should be made for the other two branches of subject (*d*), topography and military engineering—it is hard to see why only one branch of this subject is deemed worthy of a grant, and the others go unrewarded; a suitable grant would be £1 annually for each officer who passes in either of these subjects.[1] Even if the Chancellor of the Exchequer should be so stony-hearted as to refuse the £5,000 or so that would be required, the present grant might be re-arranged, and £1 paid for tactics, and the additional 10s. added on the officer passing in one or other of the other branches.

D. If all these forces are put to work and have the desired effect the apathy above referred to will vanish, and we shall then have the enlivening spectacle of a large body of officers of the Auxiliary forces clamouring for further opportunities of study, and perhaps it might be said by a sceptic: "Set your three forces to work, and let us see if they will produce the result you hope for: if they do we can then arrange for further opportunities," but in practical matters you cannot separate one set of forces and watch their independent action; to get the best results you must have your forces acting simultaneously and in combination, when they can act and re-act upon each other. It is therefore necessary to add to the opportunities for study that exist, and how is this to be done? In the earlier part of this paper it was laid down that an Auxiliary officer is a civilian first and a soldier afterwards, and has only a very limited amount of time to devote to study of military science; that time should be utilised to the full in study, and none of it wasted in travelling to and fro from the place where the instruction is given. The opportunity must be brought almost to the officer's door, and accordingly it is suggested that a system of travelling instructors should be established who would visit small towns and places where there may be three or four, or even a single officer, who would be willing to take up some of the voluntary subjects. These instructors would be employed and paid by the Government, and general officers commanding districts would be responsible that full use was made of them. A scheme would be carefully worked out, according to the requirements of each separate district; the officer commanding the regimental districts would ascertain what Auxiliary officers were desirous of instruction

[1] The paper was written last July, before the new regulations were made.

during the coming winter, and the places where it could be best given in accordance with the principles above set out; and the General Officer Commanding District or Army Corps would then have to detail the necessary instructors; these might be officers on the active list—if any were available—retired officers, or civilian instructors, it matters not which, so long as they are thoroughly competent to teach. The only persons who should not be selected are the adjutants of the Auxiliary forces—they have quite enough to do as it is, if they do it all thoroughly.

This scheme is not really so ambitious as it appears to be; the numbers of instructors that would be wanted would not be large; in the large towns one lecture would suffice for many officers, and the number of officers requiring instruction in outlying places would gradually diminish as the arrears were overtaken. Districts where large towns prevail, as in the North, would not require any more, perhaps not so many, as the Southern and Western districts, where the detachments are more scattered, and three instructors in each district ought to be able to manage the work. The expense would, therefore, not be a large addition to the estimates for the three branches of the Auxiliary forces.

So far the suggestions have dealt only with the study necessary to pass the voluntary examinations. but the fact of passing these examinations not only does not preclude the Auxiliary officer from, but rather stimulates him to, further studies in military sciences; but at this point the line should be drawn, beyond which the authorities cannot be expected to give any assistance, other than friendly encouragement, and the matter passes into the proper sphere of military societies and such like organisations. The ordinary methods of these societies are war games, lectures, and meetings, where papers may be read on topics of interest, and discussion raised. As far as the war-game goes, the societies are dependent on the readiness of officers to take part in them—they cannot do much beyond providing materials and inviting different corps to undertake a game, and arranging exercises that are suitable for all ranks.

As to lectures, the first necessity is a competent lecturer; one who can deliver a clear as well as an interesting lecture, and a military society should have no difficulty in securing a person who combines these attributes, but the syllabus of the lectures should be most carefully considered and limited; it is a mistake to cram too much into a series of lectures. Many topics are then only superficially touched on, and a lecture is apt to become a mere enumeration of principles. Officers of the Auxiliary forces, however, who attend these lectures on further studies in military science may be assumed to be more or less familiar with the principles as laid down in the text-books, but the difficulty arises in the application of the principles. My idea of a lecture under those circumstances is a scheme worked out on a large-scale map illustrating one or two principles. For instance, the march of a division for a day with the necessary orders; the work of the advanced guard; the lateral communications with other forces; the telling off of the bivouacs or billets; baggage arrangements. and all other details being shown on the map by blocks, and the application of the principles to the actual movements or arrangements being pointed out by the lecturer; but even these heads may provide more material than can usefully be included in a single lecture. The Auxiliary officer may cram his head with principles (and even in that

condition he is a better man than the officer who has no knowledge of principles), but principles cannot be applied to their best advantage without some previous practical training; the Auxiliary officer has not the necessary time to devote to the practical training, but such lectures as I have indicated might take him a step nearer toward the proper application of such principles.

As to papers and discussions, this is merely a matter of energy on the part of the military society; there are many questions affecting the forces—questions of details, methods of training, equipment and mobilisation—on which no official decision has ever been made, and which have never been really thrashed out, and which can be discussed with as much profit and more propriety than questions as to the constitution or regulation of the Auxiliary forces by the powers that be. The military societies might arrange a list of such subjects to be discussed during the winter months, and by circular invite offers from Auxiliary officers to provide papers dealing therewith, to be followed by discussion. No doubt something is already done in this direction. but it might easily be extended. A few of such subjects which seem to come uppermost can be given as an example: the medical arrangements in time of war; the distribution of loads among the wagons of battalions, other than those belonging to the Field Army; the best method of dealing with the more or less trained men who would flock back to join their battalions on actual mobilisation; the possibility of training a Volunteer battalion in bivouacs or billets on conditions approaching those of active service; arrangement for paying the men in the field, and the separation allowances for their wives and families, and technical questions affecting the other arms.

Such are the suggestions which occur to the writer for the improvement of the standard of military knowledge among the officers of the Auxiliary forces; it must be acknowledged that they are but outlines but the full details of such schemes as have been suggested would occupy far more space than can be devoted to a paper of this description; but it is claimed that they rest on sound principles. and are worthy of consideration, and capable of being carried into actual practice, and although the reforms suggested are not very heroic, yet on that account alone they are more likely to prove of practical value.

In conclusion, it must be said that throughout this paper the subject has been dealt with from the Volunteer point of view. This has not occurred through any desire on the part of the writer to unduly call attention to his own branch of the Auxiliary force at the expense of the others, but rather from the fact that he has chosen to discuss those conditions only with which he is familiar and also from a conviction on his part that if the study of military science can be made possible among the majority of Volunteer officers, the same opportunities will be quite sufficient for officers of the Militia and Yeomanry.

Major-General Sir A. TURNER, K.C.B. (Inspector-General of Auxiliary Forces): — I have listened to this paper from end to end very attentively; it is evidently the work of an officer who has thought out the matter very carefully. There is one subject that is even more important than the instruction of Volunteer officers, and that

is, how to obtain a supply of them. Out of an establishment now of 9,454 there is a deficiency of 2,360, and I regret to say that this deficiency increases a little every month, so that the first question is, How are we to stop this constantly decreasing deficiency of Volunteer officers? It is a subject there is not time to go into to-night. But it is one that deserves carefully thinking out by everybody who is interested in the Volunteer movement. With regard to the instruction of Volunteer officers, I perfectly agree with the proposition which has been put forward, that it is absolutely necessary to have schools and trained instructors for Volunteers all over the country. It is perfectly impossible for them to obtain a proper amount of instruction by crowding into a school in London. I know that over and over again officers have tried to get into such a school, and there have been no vacancies for them. Though the school is exceedingly well conducted, it is insufficient, and the proper amount of instruction that would be obtained, if there were more schools, it has not been possible to acquire. That is one point. Then there is another point, namely, that I think the promotion examinations should really be the test for everything. There are many Volunteer officers who cannot go to school; their professions and their callings in civil life make it impossible. But there are very often men of a high degree of intelligence who can devote their spare hours to study, and who can qualify themselves to pass examinations without going to school. Therefore, let the examination test be the means of qualifying an officer for promotion; we cannot do much harm by adopting that system. They do the drills and their practical work; and if during their time in the different ranks of the Service they are always working up to the high test of promotion, I think we shall get as much knowledge and instruction as it is possible for the Volunteer officer to get, consistent with the carrying out of his daily avocations in civil life. I thank the officer who has given us this address for the pains he has taken, and I am sure the discussion it will give rise to will be a very useful one, and of great benefit to us here, and to the Volunteer forces in general. I also must thank the Council of the Royal United Service Institution which gives such splendid encouragement to Volunteer officers to improve themselves. You all know that the Duke of Norfolk's Commission is still sitting, and, as Mr. Arnold-Forster said the other day, it has been sitting a long time. But everything does come to an end at last, and I know that the subject which has been before us to-night has been very fully placed before that Commission, and that we may look for recommendations on this subject from the Commission which I trust may help us to come to the result we all desire, namely, an improvement in the instruction of Volunteer officers. Volunteer officers I know well (there is no one in this country that has had more experience than I have of them) are only too anxious to learn. We are told at the present time by the Prime Minister that the policy of the Government is that the Regular Army is primarily for over-sea service, that serious invasion is not one of the perils we need be afraid of, but behind that we need the free-will of a free nation in the shape of a large citizen army, which, not only in England, but in the whole of the Colonies, we must rely on for the defence of our Empire. That being the case, and that being before us all and before the Royal Commission, we may be sure that the recommendations laid down by that Commission will not be such that it will be impossible for Volunteers, whether they are officers or whether they are men, to give so much of their time to military duties as is consistent with the necessity of carrying out their avocations in private life. I am much obliged, gentlemen, for having been given an opportunity of opening this discussion this evening.

Colonel H. H. Stewart (3rd Bn. the Royal Inniskilling Fusiliers; Major, Reserve of Officers):—I approach this subject from a somewhat different point of view to the lecturer, whom I should like, in the first place, to congratulate on his paper. It is a subject in which I have taken a great deal of interest myself from time to time from the point of view of the Militia officer. As Major Ames remarked at the end of his lecture, there are a great many things which he has said which applied equally well to the Militia, who are a component part of the Auxiliary forces. But I think it would be well if, before proceeding to indicate a course of education by which officers could improve themselves, the lecturer had remembered that we first of all have to give to the regiments or units their position or *rôle* in the scheme of defence. Education and information which are most necessary on the part of officers composing certain corps, are, in my opinion, less necessary on the part of officers composing other corps. For instance, we have to decide first of all whether the Army, of which we form part, is to be a field army or a fortress army—whether it is to be actually working with the Regulars in the field or merely garrisoning fortresses. I know that my own place is supposed to be with the Reserves at the present time; but I do not quite see that the position of, say, the Volunteer Artillery Regiments in a fortress in the South of England would require the same course of education as my own officers. I think not. I think it would be far wiser first of all to indicate to the regiments the course of instruction which they would have to follow, and to provide an instructor or lecturer to give them instruction. I admit that the greatest source of complaint is not the unwillingness of officers to obtain information themselves, but the difficulty which they have in attending the classes for supplying information. No one has any idea of how difficult it is to get officers sent to Hythe or the School of Signalling, or any of the other courses from which officers are supposed to obtain their information. I agree with the lecturer, that a regular course of lectures should be established at the head-quarters of every regimental district from, say, the 1st of October to the 1st of April, all through the winter months. I do not see any difficulty in that. The possibility of acquiring information must be brought to the officers, and the officers should not have to go to various schools to acquire their information at their own expense. One of the weak points in the Militia Force, which was brought out before the Commission which is now sitting, was the average low qualifications of officers from the point of view of education. I was asked myself how long I thought it would take the officers of Militia regiments to be able to lead their men in the field, and I said I did not think, from what I had seen of them, they would be qualified to stand with the troops in the line under at least six months' service; and I believe I am right still. It is quite certain, I think, that unless we can bring ourselves into a condition of better information, some system of universal training will have to be adopted for the Home Defence Army. The defence of the Empire cannot be left any longer to the haphazard way that we have previously adopted. We are, more or less, amateurs; and I myself am greatly disposed to favour a system of universal training. However, if the people of the country prefer that we should still have, more or less, a Volunteer Army for home defence, it will be for those who refuse to give their own service to provide more money in order to see that facilities for education are provided for the officers and men who care to take the defence of the country upon themselves; I see no other way out of it.

Colonel T. S. Cave, V.D. (1st V.B. The Hampshire Regiment):—I would like to emphasise very briefly the fact that this

paper is the outcome of that study and information which has been induced by the facilities that have been already offered, which are very few. It was, I think, in the old lecture hall of this Institution that I very strongly advocated the desirability of some further encouragement to officers of the Auxiliary forces to read and to study military science. The only things that suggested themselves to me at that time were the attachment of some letter in the Army List, as some little distinction for those who succeeded in passing all these examinations, which the Regular officer is compelled to do in order to attain promotion; and I also advocated the contribution from the State of some small sum towards the funds of the corps of those Volunteer regiments in which there were Volunteer officers who succeeded in passing. It was five or six years before the "letter" was accorded. No grant is even now given. I think there is one thing we have to contend against in inducing men to study and go in for these examinations. It is a theory, a very convenient theory, for those who do not study, that the man who succeeds in passing examinations is a theorist, and that theorists are, as a rule, useless in the field. They would like us to believe that theory and practice are opposed to each other; and as they are not theorists they are therefore practical, and consequently better soldiers. What we want is to induce the very best men to further study the science, the art, and the history of military matters; and I am sure everybody will agree that if they are good men before, they will be better men if they become masters of sound theory. I would also say that it adds to the *esprit* and prestige of the corps, that officers should qualify themselves in these examinations, although it could not, as a matter of fact, really make them any better soldiers than they were if they knew these things and did not go in for the examination. Therefore, I hope the result of the paper may be an inducement to officers, not only to study, but to pass the examinations. With regard to the facilities for instruction that are given, we all recognise that they are nothing like as numerous and effective as they ought to be. I know at the War Office they have been considering the possibility of doing something more, but everything is just about paralysed while we are waiting the Report of the Royal Commission on the Militia and Volunteers. We all hope that the outcome of that Report will be that greater facilities will be given for the instruction of officers of the Auxiliary forces—Militia, Yeomanry, and Volunteers. There is one observation of the last speaker which I must briefly allude to: That it is desirable that the places to which the particular forces are allotted should be laid down beforehand, in order that they may know what it is necessary and desirable for the officers of each particular unit to study. To some extent that is already done in the fact that the Artillery have to study that branch of the subject that relates to them. But I think everybody will agree with me when I say that wherever a man may be allotted in the scheme of defence, he will be able to fulfil his duties better in that particular place if he is thoroughly acquainted with all that relates to the science of arms.

Lieut.-Colonel H. H. Stewart:—I beg your pardon. I was only remarking on the further instruction referred to by the lecturer. Of course, there is a certain amount of elementary instruction that every officer must have.

Colonel T. S. Cave: — I should also like to say that any portion of the force which is a field force is of more value in defence, or in any other military capacity, than it is if

it is only capable of garrison duties, and only, in fact, able to dig trenches on the hills to die in. I have a great ambition to see the whole of the Auxiliary forces, excepting the Garrison Artillery, turned into a field force, so that when the occasion arises they may be able to fight anywhere. We cannot expect the enemy to be kind enough to go and attack those particular positions which are all laid down in the scheme of defence to be occupied when the time comes. My own impression is that he will probably avoid them, and will go just where there are no preparations. Therefore, if we are to be efficient we must be organised into a mobile field force.

Lieut.-Colonel H. Le Roy Lewis, D.S.O. (Hampshire Imperial Yeomanry): — First of all I should like to thank the lecturer for the very able lecture he has delivered. I think it is a very satisfactory thing that we have opened the "Q" Club Essays with this extremely able one; the writer seems to have considered the subject very thoroughly, and to have threshed out all the underlying ideas. This question of military education is a very large one indeed, and to my mind it all hangs together. I think there is no question at all that all our military educational establishments are now ridiculously inadequate. Our school of signalling, which only takes in a certain number of Auxiliary officers during the year—which only has a certain number of courses—I believe admits fifty officers at a time. Our School of Musketry at Hythe also is similarly situated; and I can assure you the number of piteous appeals I get from various officers who are shut out, and who wish to be instructed, is really a very remarkable thing indeed. We want more expansion in all our military education, and I think the lecturer has struck the keynote of the whole thing in suggesting this kind of perambulating school. I may tell you that this idea is, like all good ideas, by no means a novel one, because it is that on which the scheme of reorganisation for the instruction of officers in the Canadian Militia is now being based. The proposal is to have a sort of school, very like the County Council Dairy Schools, which is to go round and gather in the officers from various centres, giving them lectures for a fortnight or three weeks, or else bring them up for some Board examination under competent officers. As regards the promotion examinations in the Auxiliary forces, I should like to treat the problem as one, not peculiarly applying only to the Volunteers. I think the lecturer said that he felt better qualified to speak for the Volunteers alone. I think the promotion examinations are most unsatisfactory as at the present moment organised; they are unsatisfactory also from an administrative point of view. An officer on his appointment to the Militia has to do something entirely different from an officer on his appointment to the Yeomanry; and in the same manner both Yeomen and Militiamen have to do something quite different to the Volunteers. It seems to me that some scheme ought to be evolved by means of which these examinations would be put more or less on the same footing. You mentioned that not quite so much time has to be given by Volunteer officers as is given by Militia officers; that would not prevent the syllabus and the scheme for training being assimilated. There are also many other things in which there are inexplicable differences in the Regulations, in one of which the Volunteers are singularly favoured. They receive a money grant if their officers pass in tactics; but the Militia and Yeomanry officer receives absolutely nothing. Why this should be the case I do not know. Proposals have been made by the lecturer and by Colonel Cave to-night for giving extra money for each of the subjects of the promotion examination. As

you know now the whole of the scheme of military education has been remodeled, and this qualifying "Q" will be given to officers who pass in the subject which is called "D," and has four sub-heads, the first one including tactics, military engineering, and topography. I understood the lecturer to suggest that the thirty shillings should still remain in connection with the tactics, and that an extra ten shillings shall be given for each of the other two subjects.

Major W. H. AMES :—Yes.

Lieut.-Colonel H. LE ROY LEWIS :—I think that would involve a very great expenditure. There is an establishment now in the Auxiliary forces of, roughly speaking, fourteen thousand officers, so that if you calculate that out you will see that you run up to close on forty or fifty thousand pounds before you have done with it. I do not say it is not desirable, but it is an expense; and I think you ought to consider whether you could not spend that amount of money in a better way. I think there are three principles which should underlie all suggestions of this description. The first one is to make the instruction accessible. That is the great fault of the present system. There are only two schools in the whole of the United Kingdom where instruction in special subjects like signalling or musketry is given, and for instruction in the more elementary subjects the schools are also localised. I should like to see the elementary education carried out more in the districts by means of these perambulating schools, and the higher education and field officers' education centralised in places like Aldershot, or other places which might be suitable. The next underlying principle, which the Inspector-General of the Auxiliary Forces touched upon, was that you must not make your scheme too ambitious; you must not try to teach them too much; you must keep your finger very carefully on the gullet of Auxiliary officers to see that they are not being over-crammed, for the very simple reason that the Inspector-General alluded to: the impossibility of getting officers. He alluded to the shortage in the Volunteers only; but if you take the three branches of the Auxiliary forces you will find that out of an establishment of 14,000, roughly, we have at the present time a shortage of 3,400, which is a pretty serious thing; and I am afraid that if you try to over-educate officers it would have a tendency to further diminish their number. I think myself I rather disagree with what one speaker has said to-night: That there should be a differentiation of the way officers are educated corresponding to local mobilisation requirements. I think all officers should be strictly educated alike, because in time of war, when great emergencies happen, you never can possibly tell what is going to happen to an officer. I recollect very well the case of an officer, whom I know very intimately indeed, who went out to South Africa as Second-in-Command of a regiment of Imperial Yeomanry. He had not been two days in the country before he was Brigade-Major of the 20th Infantry Brigade of Regular soldiers; and if he had been unprepared he would have made a mess of his Brigade-Major's duties. When what you have described as the tug-of-war occurs, you never can possibly tell what an officer will be used for. I therefore advocate that a similar course of instruction should be given to officers. I wish to congratulate the lecturer on the excellence of his paper.

Colonel F. C. KEYSER, C.B. (Commanding Home Counties Brigade): — In the first place, I should like to express my very great pleasure that an officer, who has so handled this

subject, should be an officer of my own brigade; I am proud of the fact that it should be so. I think the question of the education of Auxiliary officers is one that could be partially settled if we had a sort of winter school of training in each regimental district at the head-quarters. I think one or more officers of the Regular Army—there are generally one or two qualified men there—could be told off as lecturers. There might be a winter course in each of these districts where officers could attend in the evening, and where they could learn a good deal of necessary military education; and afterwards those who promise well might get further instruction from the regular schools of military learning. But there is one thing I should like to impress upon the lecturer, namely, that too much theory might be fatal in the field. If an officer works entirely by theory, he may overdo it. Personally, I think an ounce of practice is worth a ton of theory, and if you cannot combine the two it would be a very great danger to overdo the theoretical part. Of course, the more an officer knows of his military duties the better; but if he is going to study on the hard and fast lines which are laid down in text books, and never varies his procedure one inch, all I can say is that when it comes to actual practical work he will find that very often he will get into a deep mess. I hope that officers commanding brigades during the poor little week that the Volunteers now have the opportunity of practical work, will try wherever they can to call out those officers who have been working theoretically, so that they may put their various ideas into practice. I have nothing more to say, except to hope that the lecturer's recommendations will take root, and that as many officers as possible will prepare to qualify themselves in earnest for the serious work that some day, I am perfectly certain, will come.

The CHAIRMAN (Colonel Lonsdale Hale, late R.E.):—I am afraid that the audience this evening exhibits from its scantiness the symptoms of the position of the Volunteer Forces at the present time. There is, everywhere, a feeling of unrest in connection with the Volunteer Forces, and a feeling of apprehension of what is going to happen; and a large number of officers say, "What is the good of going to hear about the Volunteer Force, when perhaps regulations may be issued which will upset it all?" I know that last year we felt it in the various districts. This feeling of uncertainty damped, to a very considerable extent, the ardour of a large number of Volunteer officers. The subject which Major Ames has so fully brought before you, is one to which I have directed my attention for a good many years, because although I am not a Volunteer, I suppose I have seen Volunteers in more parts of our island than almost any man who does not belong to the force, whether in Wales, in Scotland, or in England; and this subject of education is constantly cropping up in the course of conversation. With regard to the different subjects which have been mentioned, I cannot understand myself why everybody does not pass in tactics. I am the oldest teacher in the Army, and in my opinion tactics is the easiest thing in which to pass an examination. Tactics in the field are most difficult; that has nothing whatever to do with the matter at present; but if you follow the example that the lecturer has set, of occasionally looking at a good book on tactics in all the three arms, it is almost impossible to puzzle you in an examination when you have mastered it, and it is very good information that you get. Theoretical tactics is the easiest thing in the world, not merely for examination purposes, but it is such pleasant reading, quite different from anything

else. Where you get puzzled is with regard to topography, and the difficult question arises, How are you to get men who are busy all day long in civil life to learn topography unless they go to school? They must have practice out of doors, and we know that many Volunteer officers have no time, except perhaps on a Saturday afternoon. How Volunteer officers are to learn topography and military engineering I do not know. The officers cannot learn them unless they go through a short, but a regular, course. At the same time, as I have already said, I think tactics can be easily picked up for all practical purposes by study from time to time until the officers have a chance in the field. Then, with regard to the perambulating teachers which have been mentioned, I think the only thing to be done is to perambulate about the country. As I have often said, you may talk about the Volunteer Force as much as you like, but there is no such thing as a Volunteer Force as a homogeneous body. You may start these perambulators, and you will find they will answer in certain districts, but not in all. I do not know whether I am speaking to any Cornish gentlemen. I have been down in Cornwall lately, and I should like to know how on earth are you to give instruction to the Volunteer officers in that district. In one battalion they told me some time ago that the commanding officer rarely sees the companies of his battalion; they are thirty miles apart. My friend Colonel Cave has his companies pretty close together, and in London you have your companies close together; but I have been to districts over and over again where you cannot get hold of the Volunteer companies; they are all broken up; and how you are to get at them by means of these perambulating teachers, I am afraid is a difficult matter. The only thing to be done is to give the necessary amount of instruction that my friend Colonel Cave said is of practical value, because if you learn topography indoors, except for the knowledge of the map, what you learn is merely theory and nothing more. I have merely one more word to say, and that is with regard to the lectures. Nobody could support lecturing more than I do, because I have lectured probably as much as anybody. I know what the result of the lectures is, you merely sow seed in some of your audience, and that seed may eventually grow. They are useful to a certain number of people who want to learn, but listening to lectures is not the way in which you can best acquire knowledge. I think I know the difficulties of Volunteer officers, but in the same way as with every other subject, if you want to learn a thing you must study it. It is not good for me if I want to learn a subject to say, "Oh, I have not time." When I say that, I can't learn it; and that seems to me to be the dilemma in which the officers of the Volunteer Force are placed at the present time. You will have to give them time to learn these things properly. You cannot do it in the week; you have not time in the week, so what is to be done? There is no royal road to learning military subjects any more than there is to any other subject, and anybody who intends to become an efficient soldier in these branches must, somehow or other, find time for studying them. No doubt the authorities may give a good deal of assistance in the way of these instructors in different districts; but the instructors should be told, "You have to devote yourselves entirely to getting classes somehow or other, and your position will be dependent on your getting and keeping your classes." That is the point which should be impressed in regard to this perambulating instruction, to make the money results dependent upon what they produce. I am very sorry that we have not had a wider discussion than we have had this evening; the lecturer has touched on a great many points upon

which a discussion might have been started. It is always dangerous to try a new experiment, and this is one of our first experiments to hold a meeting at six o'clock in the evening, when we hoped there would have been a good audience. At all events, the lecturer will have this satisfaction, that although he has been speaking to only about twenty people he will know that his audience, in a short time, will be over five thousand, because there will be five thousand copies of this lecture sent to the members of the Institution. I cannot conclude without expressing, on behalf of the Council of the Royal United Service Institution, our appreciation of the Committee of the "Q" Club kindly offering this lecture. We do not care for second-hand lectures, or anything of that kind, but here we have an original essay, which will be a great acquisition to our JOURNAL.

Major W. H. AMES, in reply, said:—First of all, may I express my thanks for the kind way in which the lecture has been alluded to. The discussion has touched on wider topics than the paper was intended to cover, because the original subject of the essay was "The Promotion of the Study of Military Science among Auxiliary Officers, especially with a view to their Passing the Promotion Examinations"; but nevertheless, the discussion has been very valuable. I should like to say, first of all, with regard to my Brigadier's remarks, that I thoroughly appreciate the difference between theory and practice. I think theory and practice are very like, say, whiskey and soda; they are very good when they are mixed together; but they are apt to be the one insipid and the other deleterious if they are taken neat. With regard to the perambulating instructors, what I intended to suggest in the lecture was to go one step further than any of the speakers have mentioned. I do not think it would be much use having a school established at the head-quarters in the regimental district, for this reason: that in the country districts the regimental barracks are very often more inaccessible than considerable towns some distance away. May I give an illustration of Oxfordshire—the barracks at Cowley, four miles out of Oxford. I do not think we are less widely separated than they are in Cornwall, because we have two companies at Banbury in the North, a company at Chipping Norton, a company at Henley, and four companies at Oxford. The distance between Henley and Banbury is forty-five miles, and we never see each other, except for a week in camp. My idea of these instructors was not that they should collect their classes, but that they should go to the door of each officer who wanted them. In Banbury, where there are two companies, we have five or six officers, and they would combine in one class; at Chipping Norton we happen at the present time to have only one officer; but if he wanted instruction I do not see any reason why the instructor should not go to his door and give him the instruction, because otherwise the officer who wants instruction has to go all the way to some centre to meet the instructor, and therefore I say it is waste of time which he might otherwise profitably spend on study. I am very much obliged to you, gentlemen, for your kind remarks.

CAMPAIGNS AGAINST INDIA FROM THE WEST AND THROUGH AFGHÁNISTÁN.

Translated and condensed from the Russian of Major-General L. N. Soboleff, by Lieut.-Colonel W. E. GOWAN, Retired, Bengal Army.

(*Continued from March* JOURNAL, *p. 264.*)

On the 15th (27th) February, 1735 A.D. Nádir went to Kázvin,[1] where he was crowned Sháh of Persia with all the pomp and ceremonial that usually attend the coronation of great monarchs. Immediately after he had ascended the throne, he sent an Ambassador, bearing gifts, to the Sultán of Turkey, and he also despatched a Special Envoy to the Empress of Russia (Anna Ivanóvna) to announce his accession to the throne of Persia.

It would seem that, at this period, Nádir-Sháh had fully matured his plan of campaign against India, because immediately after his Coronation he appointed his eldest son, Riza-Kuli-Mirza, to be Governor-General of Khurásán, and he sent off a body of troops along the Badghis road, *viâ* Maruchak, to Andkhui, to conquer that province, which extends to the northern slopes of the Hindu-Kush range. He also nominated his brother, Ibrahim, to the chief command of the troops in the province of Azerbiján, and he sent fresh governors to the provinces of Daghistán, Herát, and Farsistán, and to the town of Shirwán, in Khurásán. Having carried out these important arrangements, he at once convened a Military Council to discuss the question of a campaign against Kandahár, and he summoned to this council several Afgháns, who were serving in his army, and personally interrogated them as to the population, rivers, bridges, and roads of

[1] Kázvin is the place at which the Sháhs of Persia are or were crowned. —W.E.G.

Fraser moreover tells us that, as soon as the terms, imposed upon the National Assembly, convened by Nádir, had been acceded to, and immediately after his proclamation as Sháh of Persia, coins were struck in his name, with the following inscription :—

"Sika bar Zar Kard Nám i Sultanat dar Jahán"
("Impress upon gold proclaims [lit. : makes the name of] throughout the world the Empire")
"Nádir i Irán i Zamin wa Khusrau i Geti Sitán."
("Of Nádir of the land of Persia, and of the King conquering the world.")

[Reverse.]
"Al Khir fima Wakeh"*
("That is best which has happened.")
And on the same side is :—
"Zarb fi Kirmán 1148 A.H.,"
(or "Struck at Kirmán [Carmania] in 1148 A.H."—W.E.G.
[* The numerical letters of this motto make up 1148 A.H. the year of his accession.]

the Kandahár province. After this he celebrated a great military fête on the vast Mogána plain, and congratulated the chief officers of his army on the coming campaign.

At length, on the 24th March (5th April), 1735 A.D., he gave orders for his army to march towards Kandahár, by different routes, one column proceeding *viâ* Kázvin and the province of Khurásán towards Herát,[1] another, under Nádir-Sháh's personal command, by a more circuitous route, *viâ* Ispahán and Kirmán.

* * * * * * *

In order to understand the reason for the adoption of these two routes, and to learn their starting point, it is necessary to trace Nádir's movements and the course of the chief events after the renewal of the war operations against the Turks, which followed the deposition of Sháh Tahmásp.

1. Nádir encounters Ahmad-Pásha with a large Turkish force, which he defeats and drives into the town of Bághdád, to which he lays siege.

2. This siege is raised by Topál Othmán, Basha Seraskier; a battle then ensues,[2] in which Nádir is defeated with a loss of 60,000 men, the Turkish loss being nearly as great.

3. Nádir retreats, with the rest of his troops, to Hamadán, where he forms another army, and with this he inflicts four successive defeats on the Turks, who had split up their forces into as many separate bodies.

4. Nádir then advances to besiege Bághdád for the second time, but whilst so engaged is called away to quell an insurrection at Shiráz, headed by one of his generals, Muhammad-Khán, Biluchi, having for its object the restoration to the throne of Persia of the deposed Sháh Tahmásp.

5. From Shiráz, Nádir returns to Ispahán for a short time, and then marches into Georgia and Armenia, where he captures Tiflis, Eriván, Shamákha, and Ganján (the modern Elisavetpol), and afterwards defeats the Turkish general, Abdulla-Pasha, on the plain of Baghavand, near Eriván.

6. Nádir then subdues the Lesghians, a fierce and turbulent tribe inhabiting the mountains that separate Georgia from the Caspian Sea.

7. From this he proceeds to the National Conference already described, which was held on the Mogána plain, situated in Northern Azerbiján.—W.E.G.

* * * * * * *

To return to the narrative. Although the numerical strength of the army organised by Nádir-Sháh for his campaign against Kandahár did not exceed 80,000 men,[3] yet that army was splendidly

---

[1] Malcolm, in his "History of Persia" (Vol. III., page 97), says that Nádir-Sháh marched his army through Khurásán and Seistán, and that the Khurásán or left column passed through Mashad and Herát. But from the narrative of Nádir-Sháh's Secretary, who wrote the history of his master in great detail, it is evident that this portion of the army passed through Khurásán by routes lying to the south of these towns.—*Author.*

[2] At a village on the bank of the Tigris called Samára.—W.E.G.

[3] Fraser says (p. 128) "Composed chiefly of horsemen. . . and that this body was shortly after followed by Tahmásp-Khán, Vakil with 40,000 more." These troops probably joined Nádir-Sháh from Azerbiján.—W.E.G.

equipped, was inured to privations of all kinds, and had experienced leaders, and its discipline was maintained by an iron hand. It had also a large complement of artillery.

It should here be stated that there arrived at Kázvin about this time an embassy from the restless Dilaur, intimating that he was desirous of giving in his submission. Dilaur, as the chief of the Taimunis, had up to this time taken advantage of the enmity between the Afgháns and the Persians, and had posed, as seemed most advantageous to himself, sometimes on the side of Nádir, and sometimes on that of Hussain, the ruler of Kandahár. Recently he had taken up a position with his fellow tribesmen near to Zamindawár, and, in order to strengthen his alliance with the Afgháns, had married a daughter of Hussain. But the two new allies had soon fallen out, and thus it came to pass that Dilaur sent an offer of allegiance to Nádir-Sháh, who was by this time on the march towards Ispahán. The answer he received was not, however, an encouraging one, it being to the effect that the new Sháh of Persia would arrange matters with him later on, when the time seemed most befitting to himself.

Whilst on his march to the Persian capital, Nádir-Sháh could not resist the opportunity of entering the mountainous country of the warlike Bakhtiáris, large bodies of whom had assembled on hearing of his approach. In a series of brilliant marches he broke up the tribal combination, and compelled many of its members to enter the ranks of his army, in which they afterwards performed excellent service.

On the 24th September (6th October), Nádir-Sháh entered Ispahán, and on the 1st (13th) November, the right column of the army marched out of the capital directly on Afghánistán. This column was composed of an advanced guard, to which was entrusted the task of punishing the Biluchis, and of the main body, under Nádir-Sháh's personal command. The route taken by the main body lay through Aberkoh and Kirmán, and the desert of Kerk, and it proved to be a long one, for by the time this column arrived at Kandahár it had traversed more than 1,000 miles.

On reaching Seistán, Nádir-Sháh made arrangements for the leaving behind his *seraglio* and baggage-train, and on the 13th (25th) January, 1736 A.D., he moved on by roads or tracks leading to Dilkgaku and Dilarám.

On the 29th January (10th February), the advancing army was near to the fort of Girishk (Kerchak). The walls of this fort were destroyed by artillery fire, and its garrison surrendered. For the better securing of his position in the valley of the Helmand, Nádir-Sháh sent one body of troops to his left to obtain possession of the fort of Zamindawár, and another body to his right to seize the fort of Bist (now known as Kila-Bist).

On the 1st (13th) February, the Persian main body crossed the Helmand river, but the surrounding country had been converted into a desert, for Hussain, the governor of Kandahár, had given orders for all the stores of provisions and forage to be consigned to the flames. The Persian forces, therefore, marched from Kushk-i-Nakhúd,[1] on Sháh-Masúd, which lies to the north of Kandahár, and here they

[1] The place from which General Burrowes moved out prior to his severe defeat at Maiwand by Ayub-Khán on 27th July, 1880.—W.E.G.

halted for 12 days. From here, foraging parties having been sent into the Hazára country, a sufficient supply of provisions was collected. The Persian army then advanced towards the Argandáb river, on the banks of which its standards were soon set up. They had hardly arrived, however, when the bold Afgháns, having made a determined night attack on the Persian camp, broke through their centre, and reached the Emperor's tents, but Nádir-Sháh's strong personal escort beat back their onslaught. The Afgháns then retired on Kandahár, and early the next morning the Persians were therefore assured that the daring night attack had been led by Hussain himself, and Nádir-Sháh consequently understood that he had before him a strong opponent.

Immediately after this the Persian troops, notwithstanding that the river was in flood, safely crossed over, and took up their quarters near the village of Kokerán, about half a march from Kandahár. From here, having passed over Mount Laki, which commands the citadel, they brought their guns to bear on it, and then, having passed round to the north of the town, took up a position to the east of it.

We do not know of what Nádir-Sháh's transport train consisted, or the number of animals in it, but we do know that he had with him a large force of artillery. We also know that the right column of his army, which was under his personal command, after carrying out a heavy expedition into the Bakhtiári mountains—a task which necessitated the covering of about 1,870 miles in eleven months—then marched from Ispahán *viâ* Kirmán to Kandahár, a distance of another 1,000 miles in three months. And that the left column of his army, which also advanced *viâ* Kázvin through Khurásán, on Kandahár, traversed about 1,500 miles in eleven months.

It was now the spring of 1736 A.D., and the siege of Kandahár, which was destined to be a protracted one, had begun. In order to cut off the beleaguered city from all sources of supply, and to prevent any accession of strength to its garrison, Nádir-Sháh sent out reconnoitring parties in various directions. One of these was ordered to the fort of Kalát-i-Ghilzai, on the road to Ghazni, and about 94 miles to the north-east of Old Kandahár. But having been told by an Afghán fugitive from Kandahár that a force of 4,000 Afgháns had been sent to cut up this detachment, Nádir-Sháh placed himself at the head of a picked body of troops and rode out to its assistance. His ride soon brought him to the town of Saf. It then transpired that the commander of this reconnoitring party, after devastating the country in the neighbourhood of Kalát-i-Ghilzai, had bivouacked on the slope of a mountain, without making any attempt to safeguard his position either by mounted patrols, or by chains of sentries, and that the Afgháns, having perceived this attitude of carelessness in a hostile country, had made ready to attack the Persian troops from an ambuscade, but the rapid arrival of Nádir-Sháh upon the scene had frustrated their plan. Nádir-Sháh, after putting this body of Afgháns to flight, returned to Kandahár. We are not, however told what happened to the commander of the party, who had only got out of a scrape through his personal intervention.

On the 19th (31st) March, foreseeing that the siege of Kandahár would be a lengthy one, Nádir-Sháh began to build alongside of the old town a new one, to which he gave the name of "Nádir-Abád." Through the centre of this town he caused to be excavated the wide and deep bed of a canal, which was filled by diverting the water

brought down by streams in the neighbourhood. A whole army of workmen, besides many of the troops, being employed in these operations, the new town grew apace, and as it was encircled by a high and thick wall, it presented the appearance of a vast fortress. At any rate, the tongue of rumour throughout Afghánistan and India deprived it in no measure of its formidable character.

Meanwhile Nádir-Sháh, having taken steps also to fortify his camp in the valley of the Argandáb river, the Afgháns then realised that the Persians would leave nothing undone to insure the capture of Kandahár, and consequently many of their chiefs made their appearance in the Persian camp to ask for terms.

Nádir-Sháh made it a rule never to order an assault on an enemy's position except in cases of extreme necessity. Indeed, as he considered such a method of direct attack to be the last measure that should be adopted, he did all he could, before resorting to it, to insure success without any such sacrifice of life, as every assault, on any position, resolutely held, must entail, *before* such preliminary measures have been adopted. Acting on this rule, he had not, up to the month of April, 1736, completed the entire investment of Kandahár, hoping that the Afgháns, finding exit from the town still open to them, might be induced to evacuate the place, and thus give him the opportunity of beating them in the open field. But he soon perceived that, after their unsuccessful reconnaissance in force towards the Argandáb river, they intended to shut themselves up more closely behind their walls, and that only small parties would venture to come out to forage or cut up solitary individuals about his camp. When, therefore, the month of April was well advanced, he decided to rigorously blockade the town and to starve out its inhabitants. He then surrounded Kandahár with a chain of solidly-built fortified towers. The perimeter of this circle of towers was about 28 miles, the interval between each tower being one mile, and in each of them was placed a strong body of troops. Then, at every 100 paces of the intervening space, smaller towers were erected to shelter smaller bodies of marksmen armed with percussion muskets. But when, in the face of these measures, individuals were found to be expert enough to break through the blockading chain, Nádir-Sháh ordered to be erected, between every two of the larger towers, two towers, of medium size, and the number of look-out sentries to be increased. Thus, in the perimeter above shown, there were 28 of the larger towers, 56 of the medium towers, and about 500 small towers. In this manner was Kandahár closely blockaded, and any Afghán, who endeavoured to break through, at once fell into the hands of the besiegers.

On the 23rd April (5th May), Nádir-Sháh received the news of the capture of Bist.[1] As this place, which lies about 30 miles to the south of Girishk, was on the Persian line of communications, it necessarily possessed a very important strategical value. Moreover, it was then a place of great strength, for it only surrendered after a

[1] On the Helmand, at the point where the river is joined by the Argandáb. It lies about 90 miles to the west of Kandahár and is now known as *Kila-Bist.—Author.*

A note on this ancient city, by the late Colonel Henry Yule, was added, in the form of an Appendix, to the published lecture delivered at the Institution, some years ago, by Major-General Biddulph, R.A., entitled "The March from the Indus to the Helmund and back, 1878-79."—W.E.G.

hot cannonade. After appointing a governor to this place, Nádir-Sháh ordered all the Afgháns captured here to be brought into his camp.

The force, which Nádir-Sháh had sent to capture Saf and Kalát-i-Ghilzai, having no artillery with it, met with no success, but when at length it had been so equipped, Saf surrendered after a bombardment of 24 hours.

Nádir-Sháh now took a further step to convince the people of the country of his irrevocable determination to subdue the Afghán forces, for he sent for his *harem*, which had already been transferred from Seistán to Farrah.

Meanwhile Seidál, the commander of the 4,000 Afgháns, who, as we have already seen, had issued forth from Kandahár in the early days of the siege, had shut himself up behind the walls of Kalát-i-Ghilzai, and he had with him a son of Hussain, who was defending Kandahár. Nádir-Sháh then sent a fresh body of troops against him. The commander of this force, in his extreme hurry to obtain possession of the place, adopted tactics entirely opposed to those of his Sovereign, and had hardly reached Kalát-i-Ghilzai before he ordered an assault. Although this unprepared attack went on for several days, it met with no apparent success. Indeed, the Persian troops were only able to obtain possession of one tower on the east side of the fort, so that the Afghán garrison held out for the space of two months, and it was only after all their means of defence had become exhausted that they at last yielded. Seidál and Hussain's son were at once sent into Nádir-Sháh's camp. As Seidál was an extremely dangerous man, and had always evinced a bitter hatred towards his captor, Nádir-Sháh ordered his eyes to be put out, but he received Hussain's son very well.

We have already said that the strong flanking party of the advanced guard, which had left Ispahán on the 1st (13th) November, 1735, had orders to punish the Biluchis for their repeated invasions of the Persian frontier provinces.

This force, under the command of Pir-Muhammad, after marching along the southern provinces of Persia, entered the desert, and then crossed the plain of Harán, which lies to the south-east of the lower course of the Helmand river, and to the south-west of Kandahár. Whilst Nádir-Sháh was besieging the latter town, he had, it would seem, some misgivings as to the safety of this force under Pir-Muhammad. He therefore detached from his own troops another body in the direction of Shuráwak, situated about 130 miles to the south of Kandahár, to divert the attention of the Biluchis in those parts. This force not only harassed the enemy, but took from them their camels and other pack animals. He also sent another force to raid in the country about Nushki,[1] and on receipt of reports of the successes which these troops had met with, he despatched orders to the general (whom he had sent from before Kandahár) to join forces with the other detachments, and to besiege all the fortified points in the district of Shuráwak. Matters having gone successfully in this direction, he appointed governors in Biluchistán, and gave special instructions to preserve the fort of Furshank, and to establish a supply-depôt there.

[1] Eighty-six and two-thirds miles to the S.W. of Quetta, and nearly sixty-six and two-thirds miles to the N.W. of Kalát in Biluchistán.

Notwithstanding this, a force of 7,000 Biluchis attacked this fort, and were only driven off after the arrival of a fresh body of Persian troops. In the course, however, of these several expeditions, Nádir-Sháh's troops obtained possession of the most important point in Biluchistán, viz., the fort of Kalát (Giálik)'[1] which lies about 250 miles to the south of Kandahár. This place effectually covers the road connecting Kandahár with Shikarpur, on the Indus, through the famous Bolán Pass, a distance of 356 miles, and it is also 80 miles to the south-west of Dadar.

In spite, however, of these general successes, Nádir-Sháh was extremely dissatisfied with the operations of Pir-Muhammad, to whom he had entrusted the chief command in Biluchistán, for he held the opinion that through his intriguing he had greatly imperilled the success of all his own carefully thought-out plans. Moreover, he not only had taken no part in the attack on Harán,[2] but had, without sufficient cause, withdrawn his troops from that place. And, added to this, he held him to blame for the loss of many men, horses, and pack animals whilst crossing the desert. For all these offences, which he attributed to the bad spirit which he had shown, Nádir-Sháh ordered him to be executed, and his head to be brought in, and at the same time he directed the force, which Pir-Muhammad had so inefficiently commanded, to march on Kandahár, to join the besieging force.

The general result of all these operations was that the lines of communication of Nádir-Sháh's army of invasion were fully secured towards the south, whilst the turbulent tribe of Biluchis had been brought under complete subjection. Moreover, by the capture of Kalát, the capital of Biluchistán, a southern route, leading from Persia to the banks of the Indus, had been opened. For the securing of the northern lines of communication, in the direction of the valley of the Amu-Daria (Oxus), Nádir-Sháh had, as we know, adopted the most decisive measures.

We have already said that, before starting on his campaign against Kandahár, Nádir-Sháh had appointed his capable son, Riza-Kuli-Mirza, to the important post of Governor-General of Khurásán, and he had, at the same time, warned him to hold himself in readiness to proceed to the north-west of Afghanistán, the objective being the town of Andkhui. So that by the time Nádir-Sháh had himself reached Kandahár, Riza-Kuli-Mirza would be in a position to co-operate with his father in the direction named. Riza had with him a force of 12,000 men, excellently disciplined, and provided with a large complement of artillery. His route lay through the province of Bádghis, the distance between Herát and Andkhui being 300 miles. Andkhui yielded without a struggle, and so did Shibirgán, 57 miles to the east of it. After arranging matters in the captured towns, Riza-Kuli-Mirza marched to Akcha, 27 miles to the north of Shibirgán, and about the same distance from Kilif, a ferry across the Amu-Daria. The inhabitants of Akcha, having submitted, joined the ranks of

[1] Not to be confounded with Kálát-i-Ghilzai, situated on the road between Kandahár, Ghazni, and Kábul.—*Author.*

Kalát, as the capital of Biluchistán, was at this time, to use the expression of Nádir-Sháh's historian, "a place important both as to position and armament."—*Author.*

[2] On the river Bedo, nearly 133¼rd miles to the S.W. of Kalát.—*Author.*

Riza's army. After this, the conquering army advanced to the town of Bálkh, 60 miles to the east of Akcha. Whilst he was yet about 20 miles from Bálkh, Riza left his transport train under a guard of one company of musketeers and then, with the rest of his force, advanced another ten miles. Early the next morning (7th [19th] June, 1736 A.D.), Riza moved on towards Bálkh, but he had not gone very far before his advanced guard came into collision with a strong body of Uzbaks, which had taken up a position in a wood. Riza at once pushed forward to the attack, whereupon the Uzbaks were driven out, but having crossed the river by a ford known to themselves alone, they found refuge behind the walls of the fort of Bálkh.

Riza-Kuli-Mirza was at this time only 18 years of age, and one might have supposed that so young a man, after obtaining a series of brilliant successes, and capturing vast provinces, peopled by both Turkumáns and Uzbaks, would have decided to finish with Bálkh at one blow, and would have taken its fort by storm. But he had with him a large force of artillery, and moreover, his distinguished father had taught him how to make the best use of this powerful arm. Bearing in mind therefore, the teaching, which he had received, he did not at once hurl his troops at the fort, but carefully placed the whole of his guns in effective positions before it.[1] The result of so doing, was a brilliant one, for, after a bombardment of 72 hours, the fort surrendered, and, as in the case of Akcha, many of the chief tribesmen of Bálkh and the neighbourhood came with their clansmen, and joined the ranks of Riza's army, which was by this time of considerable strength. The ruler of Kunduz, a province extending to the confines of Badakhshán, also sent envoys, and a declaration of his adhesion to the Persian cause.

On the 13th (25th) July, Riza-Kuli-Mirza sent to his father a report of his victories, and on receipt of the despatch Nádir-Sháh was, we are told, greatly pleased, as well he might be, for the acquisition of these several provinces (comprising what is now known as Afghán-Turkistán), lying as they do between the middle course of the Amu-Daria and the Hindu-Kush range, was of two-fold advantage: in the first place it secured the left strategical flank of the army of invasion, and in the second it threatened Kábul from the north.

Nádir-Sháh therefore, sent to his son, and his principal officers valuable presents, and to the former he also gave a special grant of 40,000 gold pieces.

Meanwhile, as Riza-Kuli-Mirza had not received from his father any direct order to cross the Amu-Daria, he decided, pending its receipt, to suspend war operations for a time and to occupy himself in setting up an administration over the conquered inhabitants. He was, however, at this time, aware that Abul-Faiz-Khán, the Amir of Bukhára and Ilbruz-Khán, the Khán of Khiva, having entered into an alliance, had assembled an army of 50,000 Uzbaks, and were advancing on Kárshi. This the impetuous young leader could not brook, so he crossed the Amu-Daria, at the head of 12,000 men, and made a rapid march towards the point threatened. In the engagement which ensued, the Bukhárans were completely defeated, whilst the Khivans, who had taken no part in the affair, fled in the direction

[1] In the face of these remarks, "wise" people in our own day would tell us that nothing is to be learnt from "ancient" history!—W.E.G.

of their own country, and the Amir of Bukhára sought refuge in the fort of Kárshi.

The brilliant campaign of his young son in no way turned the brain of Nádir-Sháh. Indeed, this cool, calculating conqueror understood very well that, in view of his undertaking against rich India, he could derive no sort of advantage by throwing away his strength in such enterprises nearer at hand. Moreover, the strategical front of his army at this time covered a distance of nearly 750 miles, reckoning in a direct line from Kárshi to Harán, in Biluchistán. His flanks, it is true, thanks to his successful occupation of Biluchistán and of the countries lying at the northern end of the Hindu-Kush passes, completely covered his main operations. In view of this position of affairs, he directed his son to leave the right bank of the Amu-Daria and to concentrate his army at Bálkh, with a view to holding the above passes. He then addressed letters to the Amir of Bukhára and to the principal chiefs of Turkistán, in which he intimated that, as they were the descendants of Chingiz-Khán, and members of the Turki tribe, their possessions were theirs by right, and that he had therefore directed his son to stop warlike operations within the limits of the Khánate of Bukhára, and to content himself with the recovery of the lawful hereditary possessions of the Persian monarchy, to wit, the possessions of ancient Persia. He, at the same time, proposed to them to send envoys to enter into regular treaties between Persia and the Central Asian Khánates. Accordingly, Riza-Kuli-Mirza at once raised the siege of Karshi, and after recrossing the Amu-Daria, went to Bálkh, there to await orders from his father to advance on Kábul.

Meanwhile, things were not going altogether happily with Nádir-Sháh's main body. The fort of Zamindawár, situated about 70 miles to the N.E. of Girishk, and 140 N. of Kandahár, which had been besieged by a strong force of Persians equipped with artillery, for a period of nine months, had not surrendered.

It would seem that the commander of the besieging force, having lost all patience, on account of the protracted opposition shown by the garrison, had decided on an assault. Whereupon certain Afgháns, in the pay of the Persians, having been called upon to give their aid, so as to better insure the success of the attack, asked that they might be permitted to enter the fort, and they promised that, if allowed to do this, when the Persians advanced to the assault they would so contrive matters as to place them in possession of part of the defences. The Persian commander, suspecting nothing, fell in with this suggestion, whereupon the treacherous Afgháns at once communicated to the garrison all information relating to the besiegers and, further, exhorted the defenders on no account to surrender. Hence, when the Persian troops advanced by night to the assault, they were repulsed with great loss, an entire company of brave Lesghians being destroyed. After severely calling to account the commander of the attacking force for his want of caution, Nádir-Sháh replaced him by another general, to whom he sent siege guns. At length, after a heavy bombardment, the fort of Zamindawár surrendered to the Persian forces on the 2nd (14th) January, 1737 A.D., and, by its acquisition, not only was their line of communications with Herát secured, but they received a further accession of strength by receiving its garrison into their ranks.

Meanwhile the siege of Kandahár had lasted for ten months. This fact, of course, showed that Hussain, in expectation of a Persian

invasion of the province, had adopted every measure to lay in a large stock of provisions. It may here be said that Nádir-Sháh, by taking advantage of the crushing superiority of his forces, could have hastened its capture, but, firstly, there was no especial necessity to do this at the cost of a large number of men, thereby depleting the ranks of his army, and, secondly, he had other important reasons for protracting the siege of Kandahár. He had to wait for the complete securing of his flanks, and for the capture or surrender of Zamindawár, and, above all he was not yet sure how far the secret negotiations, which he was carrying on with certain persons in India, with surprising skill and remarkable secrecy, would result in facilitating his principal undertaking, viz., a blow at the heart of the Empire established by the house of Timur. Indeed, before setting out in his campaign against Kandahár, he had communicated to a small number of his most intimate adherents that he was really marching against India, and that the capture of Kandahár would only be a preliminary undertaking. With this intention in his mind, he would not, of course, be at all disposed to weaken his army before the city named, but, on the contrary, would adopt most decisive measures to increase that army under its very walls, by attracting to his standards every available element likely to further his object. And to this important end he paid the greatest attention. As we have already seen, he had sent for the Afghán garrisons both of Kila-Bist and of Zamindawár, and he made it a rule to treat with special favour all those who fell into his hands, *on the understanding that they would join the ranks of his army.* Needless to say, then, that these Afgháns, with the certain prospect before them of a campaign against India, were the more ready to fall in with his views, because in a campaign of conquest in such a rich country a material source of gain seemed to them more than a mere vision.

History all the world over always affords a trustworthy indication as to what may *again* happen. As it has been, time out of mind, so also may it be in the future. And there is yet another historical characteristic which is worthy of no less attention. All the famous conquerors, who have set foot upon the Indian peninsula, have found ready allies. This feature is most noticeable throughout the history of the invasions of India without a single exception.

At length Nádir-Sháh considered that the time had arrived for him to gain possession of Kandahár, and for this purpose he detailed a column of selected troops. Orders were given to them to first of all seize the outlying towers, which had been erected for the defence of the citadel. These being secured, and amongst them one large tower, which was defended by a strong body of Afgháns, furnished with powerful artillery, of which the garrison was captured, the attacking force advanced against a stone tower, rising to the north of the citadel, which commanded the entire city. Up the ascent to this the siege guns and mortars were dragged with the greatest difficulty, but the task being completed, the artillery of the attacking force soon began to play on every part of Kandahár. The Bakhtiáris, recent enemies of Nádir-Sháh, had begged for permission to head the assault, and they were supported by a force composed of Kurds and Abdáli-Afgháns. All the outlying works having been gained, the Persians moved forward a powerful siege train to play upon the key of the position, their fire being directed on Fort Barhe-Dehdeh, situated at the western end of the citadel. Under cover of this fire, a column of

J.J. GLISTER & Co. LTD LONDON E.C.

AMARKAND
Kila Panja
Faizabad
Baroghil Pass
Dorah Pass
Mustag Range
KUNDUZ
Yasin
Gilgit
Kara Koram Range
Musluj
Chitral
Leh
Ladak
KABUL
Jalalabad
Khaibar Pass
KASHMIR
Himalayan Range
Attock
Peshawur
Ghazni
Jhelum
Sirhind
Umballa
Thanesaro
Karnal
Panipat
Meerut
DELHI
LAHORE
Dera Ismail Khan
Multan
Dera Ghazi Khan
Bahawalpur
Quetta
Thal
Dadar
Shikarpur
Larkhana
Umar Kote
Tatta
SIND
INDIAN DESERT
River Indus (Sind)
River Ravi
River Sutlej
River Jumna
EXPLANATORY MAP
of Nádir-Sháh's Campaign against India.
Route followed by Nádir's army
Scale
200 Versts to One English inch. One Verst = about 5/8ths of 1 English Mile
0 40 80 120 160 200 400 versts

troops advanced to the assault before dawn the following day; but the Afgháns beat back the storming party with a loss of 200 killed and wounded.

A fresh assault was fixed for the next day (2nd [14th] March), the column detailed being again headed by the Bakhtiáris, who were most keen to wipe out their first failure. During the night preceding the second assault, 4,000 of the troops, selected to take part in it, were hidden in the hollows of the surrounding crags or in covered trenches, and there Nádir-Sháh himself passed the night, impatiently waiting for the commencement of the assault. This began after noon-day prayer, and it was directed against the fort above-mentioned. The Bakhtiáris, having rushed forward with great daring, gained possession of this point, and then threw themselves against Fort Chahárbágh, upon the walls of which, after overpowering the garrison, they raised their standards. Although the Afgháns fought desperately, they could not withstand the impetuous rushes of their enemy, into whose hands the citadel soon fell. Hussain, with the members of his family, and a small body of devoted Afgháns, then shut himself up in the Keitul reduit, constructed on an elevated mound to the west of the citadel, and upon this the Persian guns were now turned, until it was completely destroyed. At dawn the following day Hussain sent his eldest sister, the remarkably intelligent Zainab, and a large number of his officers to declare his readiness to surrender, and soon afterwards he himself came out, clad in simple attire, to present himself to his conqueror, and having prostrated himself before him in token of submission, Nádir-Sháh raised him up and treated him with consideration. He was afterwards sent with his family and other kinsmen to a house appointed for his future residence, in the province of Mazanderán.

The clemency which Nádir-Sháh displayed towards Hussain and his relatives was a part of his carefully calculated policy. Nevertheless it made a deep impression. Here it may be remarked that whilst Nádir-Shah mercilessly punished all who opposed themselves to his will, and whilst in the heat of battle, he never spared his enemies, destroying them by tens of thousands, once he was convinced that victory was altogether on his side he ever displayed mercy, thereby astonishing even persons scarcely less severe than himself.

It should here also be observed that fully one-half of the Ghilzais, who had at once submitted to Nádir-Sháh, took no part in the defence of their country, so that with the overthrow of the rule of Hussain, the whole of this tribe became subject to the Persians.[1]

---

[1] Following the course, which he had adopted after his proclamation as Sháh of Persia, Nádir-Sháh, after the capture of Kandahár, caused a second set of coins to be issued in his name, inscribed as follows :—

"Al Sultán Nádir."
("The Sultán Nádir.")

(Reverse.)
"Khuld Allah Mulk hi."
("May God perpetuate his reign.")
"Zarb fi Kandahár."
("Struck at Kandahár.") (Fraser).—W.E.G.

(To be continued.)

RAILWAYS IN MODERN WARFARE.

By Major J. L. J. CLARKE, East Yorkshire Regiment, D.A.A.G. IIIrd Army Corps.

NOW that Army Reform is one of the burning questions of the hour, and that the keynote of such reform is contained in the phrase "preparedness for war," it is reasonable to suppose that the necessity for some sort of a military organisation for the effective use of railways in war will not be lost sight of.

That railways will play a very important part in any modern campaign can hardly be denied, and recent wars have demonstrated in no small degree the influence they have had not only strategically, but in some cases even tactically, on the battle-field. Further, military history tells us of the dire results of the want of a proper military railway organisation in the stress of war, and to what lamentable chaos and confusion, not to say disaster, the absence of such leads. The Germans realised the need of a military railway administration during the war of 1866, and the outcome of their experience in this campaign was, that in the war of 1870, they possessed a thoroughly well-organised system. The French, on the other hand, had none, as they learnt to their cost, but have since profited by their bitter experience in 1870-71. Does it not therefore, behove us not to neglect this important branch of military science? Can it be said that the lessons of our recent wars in the Soudan and South Africa have led to the establishment of organisations similar to those now in vogue with the Armies of Continental Powers? I fear but to a slight extent as yet, although the material to form the nucleus of a permanent military railway organisation is still available from among the officers and men who served on the Railway Staff in the Soudan and South Africa, even scattered as they now are over the four quarters of the Empire.

The reader may now well ask, What is a military railway organisation, of what does it consist, and what are its duties? In answer, I cannot do better than refer him to the following official publication, viz.:—"History of the Railways during the War in South Africa, 1899-1902," by Lieut.-Colonel Sir E. P. C. Girouard, K.C.M.G., D.S.O., Royal Engineers. In this work will be found not only a concise history of the part played by the railways in the war, but also a description of the formation of and necessity for an Intermediary or Military Controlling Staff to act as a "channel of communication" or "buffer" between the military authorities and the civilian railway officials. It will be seen that the cardinal point to be borne in mind is the distinct separation and difference between the "Military Controlling Staff" and the "Technical Working Staff." The former is the military railway organisation needed to obtain the best results from a military point of view from the use of such railway systems

as exist in the theatre of war, and should consist of officers and men of the Royal Engineers, and other branches of the Service, who have been specially trained in railway work; whereas the latter consist of the ordinary civilian *personnel* required to work any railway system in any country in peace time, supplemented in war by military engineers, both officers and men, as may be required, or the technical staff may be entirely military. I would now refer the reader to the following pages of the History, viz.:—for a description of a Military Controlling Staff, pp. 10 to 25, 31 and 32, 34 to 38; for that of a Technical Working Staff, organised in the midst of war, pp. 37 to 64.

A pamphlet was published by authority in Pretoria, in October, 1900, entitled, "Working of Railways—Duties of Railway Staff Officers." This useful little work and the History constitute apparently the only literature on the subject extant in our Service, though in France and Germany there are many and various works to be found dealing with this branch of staff duties, and thus emphasising its importance.

A perusal of the above will give the reader a clear and succinct account of what a military railway organisation is, and of the nature of the work and duties of the officers and men pertaining thereto.

The absolute necessity for an Intermediary Staff is clearly shown in the history, as also is the reason for the temporary reconstruction of damaged lines being carried out by Royal Engineers, and not by the Civil Engineering department of the system concerned. (See pp. 26 and 27.)

There are, however, several points which deserve considerable attention with which I now propose briefly to deal.

1. Mobilisation for Home Defence.

The question now arises, How is a military railway organisation to be adapted to the conditions prevailing in the United Kingdom? As regards the Technical Working Staff, the resources of our great railway companies are so gigantic that it is doubtful whether any extraneous assistance from Military Engineers would be required, except possibly for temporary repairs to damage done by an enemy that had effected a landing on our shores, and become possessed of the railways in the vicinity. As regards a Military Controlling Staff, the following outline is suggested:—

a. A Central Committee to be established in London, of very similar composition to the present "War Railway Council," but remodelled to suit the conditions of the new Army Council and Imperial Defence Committee.

b. Subordinate committees in each command or district, consisting of an officer of the General Staff (if possible, one who has had experience or training in railway duties in war), and a senior civilian traffic official of the railway company concerned.

c. At important military centres, such as "Mobilisation" and "Concentration" stations, a selected and qualified officer to be appointed for railway duties when required. Such officer to be styled a Railway Staff Officer, and to be in touch with the traffic officials at his station to whom his "status" and duties should be quite familiar.

d. The portion of the schemes for mobilisation for home defence affecting railways, to be drawn up by the Central Committee, local details to be worked out by the subordinate committees, so that on the order to mobilise, what is required of the railway companies may be exactly known both by the military railway officers and the civil railway officials.

2. Foreign Expeditions or Campaigns Abroad.

What is evidently required is a large reserve or nucleus of officers and men trained in railway work and duties, from whom the numbers required to form the Military Controlling Staff, and such Technical Working Staff as found necessary, would be taken to form the Director of Railways Department of the Expeditionary Force or Field Army.

This reserve might well be obtained as follows:—

a. By increasing the number of young officers of the Royal Engineers permitted to go through courses of one or two years with our big railway companies.

b. By allowing a limited number of officers of other branches of the Service to go through a modified traffic course, say of six months, with a British, Indian, or Colonial Railway.

c. All officers, who served on the staff of the Director of Railways in the South African, Soudan, and China campaigns for six months or more, to be noted as qualified in railway duties, and to be employed as officers of the Intermediary or Military Controlling Staff at all manœuvres in the United Kingdom, India, or the Colonies, at which railways would be employed. Such officers, when actually employed in railway duties to be given assistants from partially trained or untrained officers, who would thereby gain experience, and at the conclusion of the manœuvres be reported on as qualified or otherwise.

d. As regards the provision of men in sufficient quantity for a Technical Working Staff, the experience of the South African war has conclusively proved the necessity for having some system of registration among railway employés in peace time, whereby for a small retaining fee the names of all such men willing to render themselves liable to be called out for work on railways abroad in case of war would be recorded.

e. Further the advisability of increasing the number of Railway Companies Royal Engineers might well be considered, and possibly more important still, the raising of more Railway Volunteer Corps on the lines of the existing corps at Crewe.

3. Some Notes on the Duties of the Intermediary Staff.

a. In war, the Director of Railways of the Army or Field Force, and in peace the president of the Central Committee represent the heads of the Intermediary Staff.

The former would be on the staff of the General Officer Commanding the Army or Field Force; the latter should be under the Quartermaster-General or Third Military Member of the Army Council.

b. Assistant or Deputy Assistant Directors of Railways would be appointed in war in number according to the size of the theatre of operations, and number of railway systems involved. In order to fulfil their principal duty, *i.e.*, of seeing that all military requirements for rail transport, etc., are carried out by the Technical Working Staff of the railway system concerned, an Assistant or Deputy Assistant Director of Railways must continually, as it were, "feel the pulse" of the traffic—the ideal to be aimed at being to obtain the maximum amount of work from the railway, with the minimum amount of interference from the military. The appointment also of the subordinate officers of the Intermediary Staff rests in their hands, and they are responsible for their efficiency in every respect.

c. The duties of a Railway Staff Officer are enumerated on page 24 of the History, and this alone would suffice to show the reader their multifarious and arduous nature. At large and important railway stations in war-time, there is continuous and incessant work for a Railway Staff Officer throughout the entire twenty-four hours, thus necessitating more than one officer for the post. Further, in countries where there is a civil population in the war area of any size, there is consequently more or less civil traffic both of passengers and goods, and the Railway Staff Officer has the additional, often very onerous, duties of checking all the permits issued by the Provost Marshals and Police Departments for such traffic to be accepted by the railway officials.

4. Military Interference.

Too much insistence cannot be placed on the absolute necessity for impressing on all ranks of the Army or Field Force, the fact that the officers of the Intermediary Staff *alone* can give orders to the members of the Technical Working Staff, be they soldiers or civilians. This fact should be embodied in our regulations, and brought into effect for peace conditions as well as for war. Of course the officers of the Intermediary Staff must be properly trained in their duties, otherwise the benefit of such orders and regulations would be greatly lessened.

I see no reason why all officers should not, during their service, become acquainted with and obtain some knowledge of railway working, and it should most certainly form an important part of the course at the Staff College, so that every officer of the General Staff in war should be thoroughly acquainted with the principles of military railway organisation. The interference by military, so much complained of by the civilian railway officials in South Africa, will, I feel sure, be far less in any future campaign, provided the "status" of the Intermediary Staff is fully recognised by our military authorities.

5. Some Notes on a Technical Working Staff in War.

It will be obvious from a perusal of the History that it is in the highest degree hazardous in war to remove the civilian officials of a railway system *in a friendly country*, and to attempt to work it with military engineers alone. This was not done in South Africa, except in so far as rapid and temporary reconstruction is concerned.

As regards the working and management of a railway system in a *hostile* country, either in the case of lines captured from the enemy, as in South Africa, or actually constructed *ab initio*, as in the Soudan, this may *have* to be undertaken by such military railway *personnel* as is available, but undoubtedly civilian aid in the Traffic and Locomotive Departments will be required sooner or later, as the demands on the newly acquired lines become greater and the traffic proportionately heavier.

It is hard to exaggerate the difficulties that are met with in getting into working order a railway system that has been purposely destroyed by the enemy. On paper it sounds fairly simple to build a new railway or repair an existing one and work it, but the process actually is one that taxes the resources and ingenuity of a Technical Working Staff, whether civil or military, or both, to the utmost. In South Africa unique and magnificent work was done by the Works Department of the Imperial Military Railways which has not attracted as much attention or received as much recognition as it deserved. On page 50 of the History will be found the following passage:—"The repairing of the Railway kept pace with the advance of the Army in almost every case." This and the construction of the railway in the Soudan is assuredly without parallel in military history.

Unstinted praise is also due to the "Running Staff" (*i.e.*, the drivers, firemen and guards of trains), of the Imperial Military Railways, who worked their trains loyally and fearlessly in constant danger of being blown up by dynamite mines, or fired at by skilled marksmen.

If a large reserve of trained railway men is not forthcoming in time of war, it entails employing men that cannot be relied on, or withdrawing soldiers with railway experience from the ranks, both of which courses are open to grave objections.

6. Armoured Trains.

These are undoubtedly of the greatest value for patrolling the line in rear of an advancing Army, and of preventing the railway from being attacked and destroyed by "guerillas," but it is essential that they should be properly employed and supplemented by fortified posts or blockhouses along the line. It is not the *rôle* of an armoured train to be sent ahead of a force to reconnoitre. In the guerilla warfare in South Africa, the armoured trains did very valuable work, more especially in connection with Lord Kitchener's famous "drives," when they were invariably extensively used. Each train was a completely equipped fighting unit, and bore no small resemblance to a gun-boat of the Royal Navy, having its search-light, telegraph station (so that, at any halt, connection with the railway telegraph wires along the line could be easily effected, and rapid communication with the nearest stations secured), its armament usually of a naval Q.F. gun and a machine gun, its infantry garrison of about 30 men, and also two officers (one of whom was invariably an artillery officer).

Another use the Armoured Trains were frequently put to was the duty of escorting important special trains, such as those conveying the Commander-in-Chief, or the High Commissioner, or goods trains, conveying ammunition or important stores, which it was vital should not fall into the hands of the enemy.

7. Hospital or Ambulance Trains Under the Red Cross.

These are another feature of the use of railways in modern warfare, and were brought to a great pitch of excellence in South Africa, where eventually eight were used during the war and kept continually at work. Each train consisted of eight bogie corridor saloons, and provided comfortable lying-down accommodation for from 70 to 100 patients, and had kitchen, pharmacy, lavatories, etc., and compartments for the staff of the trains, which consisted of two medical officers, two nursing sisters and a proportion of non-commissioned officers and men of the Royal Army Medical Corps.

Sick and wounded were brought in from the front in transport wagons and carts to the nearest point on the railway where a hospital train could be sent. This was then loaded up, and proceeded at once as a special train to the base or such station that had a general hospital, with room for the trainload of patients. These general hospitals were established invariably at convenient railway centres, and were provided with special sidings, platforms, and when possible, electric light installations, so that at whatever hour of the night or day the hospital train arrived, its load of sick and wounded could be promptly taken out of the train, and removed to the hospital wards.

8. Conclusion.

I cannot leave this subject without reference to the present campaign in the Far East, where military developments are awaited with intense interest by all soldiers, and the use made of railways during the progress of the operations will, no doubt, be amply demonstrated on both sides.

How will Russia grapple with the task of supplying the huge army which, no doubt, she will, and is, concentrating in Manchuria by means of the single line of the Trans-Siberian and Manchurian Railway? Will Japan be forced to construct a line from Seoul to Yalu? And how, in the event of her forces occupying Manchuria, will she repair and work the line in that country? Time alone can answer these questions.

NAVAL NOTES.

HOME.—The following are the principal appointments which have been made: Captains—A. W. Paget, C.M.G., to "Charybdis," and as Commodore, second-class, during Newfoundland Fishery season; E. G. Shortland to "St. George"; P. W. Bush, M.V.O., to "Royal Sovereign"; Sir G. J. S. Warrender, Bart., C.B., to "Lancaster"; A. L. Winsloe, C.V.O., C.M.G., to "Queen." Commanders—C. V. De M. Cowper, to "Harrier"; M. R. Hill, to "Perseus"; E. M. Cooper-Key, to "Minotaur"; H. Du C. Luard, to "Cadmus."

The first-class battle-ship "Russell" arrived at Plymouth from the Mediterranean on the 18th ult., and paid off at Devonport on the 6th inst.; her officers and crew turned over to the new first-class battle-ship "Queen," which commissioned at Devonport on the 7th inst. for the Mediterranean, on which station are already six of her sister-ships. The "Russell" was also commissioned on the 7th inst., for service with the Home Fleet, the officers and crew of the "Benbow" being turned over to her, that ship being placed in the Reserve.

The first-class battle-ship "Renown" arrived at Plymouth from the Mediterranean on the 2nd ult., and she will pay off at Devonport on the 15th inst. The first-class cruiser "Andromeda," commissioned at Portsmouth on the 1st ult., for service in China, leaving on the 12th ult. for that station, where she will relieve the first-class cruiser "Blenheim." The first-class cruiser "Crescent," flying the flag of Rear-Admiral J. Durnford, C.B., D.S.O., left Portsmouth on the 21st ult., for the Cape. The first-class cruiser "Diadem" paid off at Chatham on the 29th ult. The first-class cruiser "King Alfred" arrived at Plymouth on the 30th ult., with the relieved crew of H.M.S. "Glory," from China, and she will pay off at Portsmouth. The first-class cruiser "St. George" commissioned at Portsmouth on the 15th ult., and will relieve the second-class cruiser "Cambrian," as Commodore's ship of the South Atlantic Station. The first-class cruiser "Edgar" paid off at Devonport on the 21st ult., and her officers and crew turned over to the new first-class armoured cruiser "Essex," which commissioned on the following day.

The second-class cruiser "Latona" arrived at Portsmouth on the 8th ult., from the West Indies, with the relieved crew of the "Pallas." The second-class cruiser "Astræa" left Sheerness on the 8th ult. for the Mediterranean, where she relieves the "Diana." The second-class cruiser "Brilliant" commissioned at Portsmouth on the 8th ult. for the South Atlantic Station, and left on the 18th ult. for her destination. The second-class cruiser "Scylla" left Sheerness on the 23rd ult. for the Cape, taking out a new crew for the "Terpsichore," which recommissions at Simons Bay. The second-class cruiser "Venus," has been detached from the Home Fleet, and left Portsmouth on the 26th ult. for the Mediterranean, where she relieves the "Intrepid." The third-class cruiser "Barracouta," from the Cape, paid off on the 11th ult., at Chatham.

The loss of Submarine "A1."—A terrible disaster occurred in the Channel on the afternoon of the 18th ult., when the British submarine "A1" foundered near the Nab Lightship, with the loss of Lieutenant Mansergh, who was in command, Sub-Lieutenant Churchill, and her crew of nine men. It is believed that she was struck by the "Berwick Castle," belonging to the Union-Castle Line, bound from Southampton for Hamburg.

The lost boat was one of the newer type of submarine. Those of the earlier class had a displacement of 100 tons, while that of "A1" was nearly 200 tons. She was among the boats which took part in the manœuvres witnessed by the Prince and Princess of Wales at Portsmouth, in the early part of the previous week, and subsequent to the manœuvres it was pointed out by some naval critics that her performances revealed certain features in which she was inferior to the boats of the earlier class. The larger boat, it was stated, was less easily managed than the smaller boats, and did not sink with sufficient rapidity. These defects, however, were not considered of a serious character, and it was hoped and expected that greater familiarity with the complicated mechanism would secure results of a more satisfactory nature.

Divers were at once sent down, as soon as it was realised that something was wrong, and when her position was discovered, attempts were first made to raise the sunken vessel by means of wire hawsers, but owing to the force of the sea and the exposed position in which the wreck is lying, these attempts failed, and the work of salving has since been entrusted to the Neptune Company, of Stockholm, whose salvage steamer was at Portsmouth when the wreck occurred, and her services were thus instantly obtainable; but owing to the continuation of the bad weather, the salvage operations have not as yet (15th inst.) been successful.

The submarine is lying nearly upright, with a list of 10° to port, the "Berwick Castle" having struck her on the starboard beam, and apparently the chief damage done is at the conning tower, as the marks of the collision with the liner are plainly visible at that part of the vessel, all the paint having been scraped off the starboard side of the tower. As far as can be ascertained by an examination of the hull, there seems to have been no defect in her, and that her sinking was caused by the collision.

Launches.—The first-class armoured cruiser "Argyle" was launched on 3rd March. The principal dimensions of the new vessel being the same as in the cases of her predecessors of the same class, these need only be briefly recapitulated, although in general construction the new vessel has, or will have, features peculiar to herself which demand a little fuller notice. The principal dimensions are:—Length, between perpendiculars, 450 feet; beam, 68 feet 6 inches; depth, moulded, 38 feet 6 inches; mean draught, 24 feet 9 inches; displacement, 10,700 tons; I.H.P., 22,000; speed, 22¼ knots. Owing to the fact that the launch was delayed for some months pending the completion of the new dock and crane, the hull of the "Argyle" is in an unusually forward state of construction, and the launching weight was in consequence greater than in the case of any of the other cruisers of the class when put into the water. More than the usual amount of machinery had also been put on board prior to launching.

The vessel has an armoured side between the main and lower decks about 13 feet wide, and extending for 250 feet fore and aft, of 6-inch specially hardened steel. This protects the vital parts of the ship, and encloses the engines and boilers, magazines and shell-rooms, work shops, and stores. Forward of the 6-inch belt a 4½-inch belt extends to near the bow, where it is tapered to 2 inches, and runs into the ram, thus stiffening this important part of the structure. The armour is bedded on teak planking, behind

which are two thicknesses of ordinary steel plating. A citadel armoured bulkhead, 4½ inches thick, runs across the vessel at the after end of the 6-inch belt, thus enclosing all the important parts. Abaft this the protective deck of 2 inches thick protects the after part of the ship, including the steering gear, etc. The main deck over the armour is built of two thicknesses of steel plate, as is also the lower deck, which is of the turtle-back form. The hull is sub-divided into over 200 water-tight compartments, fitted, of course, with water-tight doors and scuttles. The double bottom extends all through the engine and boiler space and under the magazines forward and aft, part of it being fitted for carrying reserve feed-water for the boilers. The coal bunkers extend all along the engine and boiler spaces, and thus afford additional protection behind the armour, and have a capacity of over 1,800 tons.

Beginning with the "Argyle," the Admiralty have quite recently decided to strengthen the fighting power of the forward battery in vessels of her class, and render them still more formidable war vessels. Instead of the 6-inch guns in the forward casemates, there will be 7·5-inch Q.F. guns in barbettes on each side. This will necessitate very considerable alteration in the forward part of the ship, imparting quite a different appearance. The top sides will have to be cut back and the casemates removed to give the necessary clearance for the larger guns. Magazines and shell-rooms, etc., below will also require to be modified to suit the new armament. The armament will now consist of four 7·5-inch Q.F. guns in barbettes, six 6-inch Q.F. guns in casemates, two 12-pounder Q.F. guns, twenty-three 3-pounder Q.F. guns, two Maxim guns, and two 18-inch submerged torpedo tubes. The barbettes and casemates are of specially hardened steel 6 inches thick. The 7·5-inch guns are in direct communication with their own magazines and shell-rooms, there being a central armoured hoist from each barbette worked by hydraulic power, thus enabling the men working the guns and those supplying the ammunition and shell to be always under protection. There is also an ammunition passage running along each side of the engine and boiler space under the lower protective deck, connecting the fore and after ends of the vessel, so that, should either the forward or after guns be put out of action, the ammunition can be transported to either end as required.

The propelling machinery of the "Argyle," which is being supplied by the builders, consists of two sets of triple-expansion engines, arranged in separate water-tight compartments. Each set has four cylinders, the diameter being: high-pressure, 41½ inches; intermediate pressure, 65½ inches; and two low-pressure, each 73½ inches, all having a stroke of 3 feet 6 inches. The engines will develop 21,000-I.H.P. The high-pressure and intermediate-pressure cylinders are fitted with solid forged-steel liners, the intermediate-pressure cylinders being steam-jacketed. The shafting is hollow, the crank shaft being 18 inches exterior and 9 inches interior diameter. There are four large condensers, which serve for the main and auxiliary engines. The total cooling surface is 26,300 square feet, and the condensers are arranged so that any one may be overhauled while the others are at work.

There are four separate boiler-rooms. In the aft boiler-room six single-ended cylindrical boilers are fitted. In the other three boiler-rooms sixteen water-tube boilers of the Babcock and Wilcox type are fitted, and all the boilers are arranged to work under a modified system of forced draught and yield a pressure of 220 lbs. Fourteen fans are fitted in the boiler-rooms, driven by enclosed steam engines, and six electrically-driven fans in the engine-rooms for ventilating purposes.—*Engineer.*

The new third-class cruiser "Sapphire," which was launched from the yard of Palmer's Shipbuilding Company, at Jarrow, on the 17th ult., is a third-class cruiser of the latest type, specially designed to obtain a high rate of speed with a moderate H.P. Her dimensions are 360 feet by 40 feet by 21 feet, the displacement being 3,000 tons, on a draught of 14½ feet. She is fitted fore and aft with a protective deck 2 inches thick. The armament of the vessel comprises twelve 4-inch guns, ten of which are placed on the upper deck; the foremost pair and the aftermost pair are capable of fore and aft fire. There are eight 3-pounders. Two above-water torpedo-tubes are fitted on the upper deck. The vessel is to be fitted with twin-screw engines, each having four cylinders, capable of developing 9,800-H.P., and there will be ten boilers of the Reed water-tube type. She has a total bunker capacity of 750 tons, which will give a large radius of action at a moderate speed.—*Times* and *Naval and Military Record.*

France.—The following are the principal promotions and appointments which have been made: Vice-Admiral—E. M. Richard to be President of the Hydrographical Committee. Rear-Admirals—C. Aubry de la Noë, J. B. Melchior to be Vice-Admirals; F. A. Leygue to command a Division of the Squadron of the North. Capitaines de Vaisseau—J. A. Fort, L. A. Massenet, R. d'Abnour, J. A. Philibert to be Rear-Admirals. Capitaines de Frégate—E. E. Nicol, H. B. Pugibet, F. P. Moreau, P. A. Ortolan, H. F. Suisse to be Capitaines de Vaisseau; A. H. De Spitz to command of Fixed Defence at Lorient; M. J. Courroux to "Nièvre"; A. A. Lefebvre to "Manche."—*Journal Officiel de la République Française.*

Promotion still continues slow in the French Navy; Vice-Admiral Aubry de la Noë, the senior of the two Rear-Admirals to be promoted, is in his sixty-third year, and will have to retire in a little over two years' time; he has over 46 years' service. Vice-Admiral Melchior is two years junior, both in point of years and service. Rear-Admiral Fort, the senior of the four capitaines de vaisseau selected for their flag, is fifty-nine, and has forty-two years' service, while the junior, Rear-Admiral Philibert, is fifty-six, with forty years' service. Of the five new Capitaines de Vaisseau, the youngest, Moreau, is forty-six, with thirty years' service, while Captain Ortolan is fifty-seven, with forty-one years' service.

Rear-Admiral Leygue hoisted his flag on board the coast-defence battleship "Bouvines" at Brest on the 21st ult., in succession to Rear-Admiral Rouvier, in command of the 2nd Division of the Squadron of the North.

The crews of the ships of the Northern Squadron were completed to their full complements on the 1st April. More than 3,000 Reservists and men on leave have been recently called up, and have joined the Depôt at Brest; of these, 1,600 have been drafted to fill the vacancies in the Northern Squadron.

Grave complaints come from Toulon regarding the want of men for service afloat, due, it is said, to reduction in the length of service of the *inscrits maritimes*, introduced by M. Pelletan, from 47 to 42 months. It was recently found impossible to complete the crews of the two destroyers "Mousquet" and "Fronde," commissioned for service in the Far East, without taking men from the ships of the active Mediterranean Squadron.

Bizerta.—The state of the naval establishment at this port is giving rise to serious dissatisfaction. The two dry docks so long in construction are not yet ready for use, and though the pumping machinery has arrived, it has not yet been erected. A further delay, it is said, will occur, as it

has been found necessary, on account of the shallowness of the lake, to dredge a canal up to the dock entrance for large ships, and this will take considerable time, and no money has yet been appropriated for the purpose.

There is also a complaint as to the coal supply. The reserve of fuel should amount to 24,000 tons; but as a matter of fact, only 6,000 tons are in store. The barracks and most other buildings are also said to be unfinished, and work apears to be at a standstill.

New Ships and Dockyard Notes.—Cherbourg.—Orders have been received for the coast-defence battle-ship "Vengeur" to be taken in hand for a thorough overhaul, and it is believed that she is to be employed as a stationaire at one of the foreign bases of the fleet, as her sister-ship, the "Tempête," is at Bizerta. Although of an obsolete type and not fitted for sea work, the ship is still well protected and heavily armed for her displacement of 4,700 tons, as she has a complete water-line steel belt of 12·9 inches, tapering to 9·8 inches, with a central redoubt protected by 11·8-inch armour, the turrets and bulkheads having also the same thickness of armour; for armament she carries two 13·4-inch guns in the turret forward; but it is probable that now two of the new 10·8-inch guns will be substituted, as was done with the "Tempête."

The torpedo depôt-ship "Foudre" has arrived at this port, where she is to be fitted to convey the two submarines "Lynx" and "Protée" to Saigon; it had been proposed to transport the two submarines by rail to Toulon, and embark them there, but the weight was found to be too great. It is said that it will be at least a month before the "Foudre" can be got ready to receive them, as her boilers are also to be thoroughly overhauled. She carries four second-class torpedo-boats, 18 metres long, and of 18 knots speed, before the main-mast, and the cradles for carrying the submarines will have to be constructed on the after part of the deck. The "Foudre" will be employed for 9 months on this service, and will make three trips. In the first trip, as already stated, she will take out the "Protée" and "Lynx" from Cherbourg; she will then return to Toulon and embark the submarines "Aigrette" and "Perle," and returning to Cherbourg, she will, in the third trip, take out the submarines "Ludion" and "Naïade." All six submarines are for Saigon.

The new destroyers "Dard" and "Balliste," built by the Société de Saint Nazaire, Rouen, have concluded their full-speed trials satisfactorily, having attained a mean speed of 29·4 knots, which is more than a knot over the contract. The new torpedo-boat No. 279 has completed her full-speed trials, making 26·5 knots, with 339 revolutions, which is half a knot over the contract. She is one of the new boats of the 1900 programme, Nos. 278 to 294, which ought all to be passed into the Service this year. They are rather larger than the previous boats of this class, their dimensions being :—Length, 121·4 feet; displacement, 90·6 tons, with engines developing 1,900-I.H.P., giving a speed of 26 knots, instead of the 24 knots of the earlier boats, steam being provided by two Normand boilers. Nos. 293 and 294 are being fitted with turbines, the first-named having been launched from the Normand Yard at Havre on the 17th ult.; she will have five Parsons' turbines and three propeller shafts. Three turbines will be used when she is going full speed; one when cruising at 14 knots, and one for use when going astern. The dimensions of No. 293 are as follows :—Length, 129·6 feet; beam, 13 feet 9 inches; draught, 3 feet 6 inches, on a displacement of 97 tons; her engines are to develop 1,800-I.H.P., giving a speed of 24 knots, steam being supplied by Normand water-tube boilers. No. 294

is 3 feet 3 inches shorter, but her displacement, I.H.P., and speed will be the same; her water-tube boilers will be of the Temple-Guyot type. The torpedo-boats, which have been ordered since, will be somewhat larger, the displacement being increased to 100 tons, and the I.H.P. to 2,000, which is to give the same speed, viz., 26 knots.

The armoured gun-boat "Cocyte" has been prepared for commission but her destination has not yet been made known. Of her three sister-ships, two, the "Styx" and the "Achéron," are at Saigon, while the "Phlégéton" is at Bizerta. Although these vessels are bad sea-boats, with poor accommodation for officers and men, yet, owing to their protection and armament, they are very useful for coast-defence, or service in the Indo-Chinese rivers.

Brest.—The first-class armoured cruiser "Jeanne d'Arc," which has been now for some months in the dockyard hands at Brest, has recommenced her trials, but they have not been satisfactory. Among other modifications made while the ship was in dock, was the reducing of the size of her bilge keels; but she is still unable to do more than 22 knots, in place of the 23 for which she was designed, and her screws are again to be changed; she has no difficulty in maintaining a speed of 19 knots, and can pass rapidly from 10 to 15 knots, and from 15 knots to 20; and as she has a large radius of action, is well protected, and well armed, in spite of her failure to realise 23 knots, she is still a formidable and useful cruiser.

The new first-class cruiser "Léon Gambetta," which ran on a rock while on her trials off Brest on the 1st ult., was taken into dock on the 21st ult., and orders have been received to press on with her repairs. The delay in docking her is due to the fact that there is only one dock at Brest apparently capable of taking in a ship of her size, and as this was occupied by the "Jeanne d'Arc," she had to wait until that ship could be moved. At the inquiry since held, the pilot in charge stated he did not think she struck any wreckage, but that owing to the compasses not being properly adjusted, and to a heavy snow squall at the time of the accident obscuring the horizon and leading marks, she got off her course and probably struck a pinnacle rock. Two tugs and three torpedo-boats have since been searching for the supposed rock, but it has not yet been located.

The new first-class cruiser "Marseillaise" has been selected to convey the President to Naples on the occasion of his visit to the King of Italy; she left Brest on the 10th ult., arriving at Toulon on the 19th ult.; after conveying the President of the Republic she is to be definitely attached to the Mediterranean Fleet, where she will take the place of the "Pothuau" as flag-ship of the Cruiser Division of the Fleet.—*Le Yacht, Le Temps,* and *Le Petit Var.*

Should France Maintain Squadrons in both the Mediterranean and Channel? — The *Yacht* discusses the important question as to the advisability of organising the Mediterranean and Northern Squadrons in one Fleet. "There was no question," the writer states, "during the years which followed immediately after the reverses of 1870 of maintaining a fleet sufficiently strong to protect at the same time both the Mediterranean and Atlantic Coasts of France. The efforts of the country were naturally devoted to the organisation of a powerful Army, in view of a Continental war, and our battle-ships were grouped at Toulon, where they formed an Evolutionary Squadron.

"On the morrow of Sadowa, and following the signature of the Treaty of Frankfort, Bismarck, with his strong belief in the destinies of Germany, had begun to take the necessary steps for the protection of the Baltic and

North Sea Littoral, and to create a Navy for his country. Italy, with the enthusiasm of a young and confident nation, followed with a naval programme traced out for her by that eminent organiser, Admiral di Saint-Bon. Austria, with the aid of the scientific and highly trained officers, which are so marked a feature in her Navy, has exerted herself to guard against any attempt at revenge for her famous victory at Lissa.

"When the Triple Alliance was concluded, it became an absolute necessity for France to maintain two naval forces, one in the Channel to face the German Fleet, and the other in the Mediterranean to face a combination of our other two possible opponents. This object was attained—more in appearance than in reality—in 1888, by the creation of the armoured division of the North, and the reorganisation of the Western Mediterranean and Levant Squadrons, so that Vice-Admiral Peyron was able to state, with some amount of truth, from the tribune of the Senate :—'We are in a position to take the offensive in the Mediterranean, and to remain on the defensive in the Channel.' Since then successive Ministers have carried out the policy of attaching our best fighting ships to the Mediterranean Squadron; while the Northern Division, now become the Squadron of the North, has been on the whole formed of second-class ships. It follows that if, on the coast of Provence, France is always in a state of readiness to make head against the combined efforts of Austria and Italy, she has never had, and she does not yet possess, a naval force in the Channel capable of resisting successfully the powerful German Fleet, which is both numerically and generally the stronger. Fortunately the Russian Alliance restores the equilibrium. While that Alliance endures, the German Fleet will not, in the event of a conflagration, quit the shores of the Empire. It would appear, then, that it would be more to our interest to form one strong single fleet out of the present Mediterranean and Channel Squadrons, which would be sufficiently powerful to defeat in one battle the combined Austrian and Italian Fleets, rendering us mistress of the Mediterranean, and free to challenge Germany on her own coasts. On the other hand, with the present distribution of her ships, France runs the risk of being unable to obtain a victory on any of the theatres of war.

"But have we only to fear the Triple Alliance? An incident a few years ago brought us suddenly face to face with the possibility of a far worse eventuality. The Fashoda affair showed our weakness in face of England. At present the currents of the air are all in favour of peace; but there may be a change for the worse, and so long as we have a fleet we ought to be in a position to use it to the best advantage. If the formation of our squadrons into a single fleet is advisable, in view of the steady increase in the naval forces of the Triple Alliance, how much more does it seem necessary if we are to struggle, with any chance of success, against the most powerful Navy in the world!

"It has been to the interest of England, who saw with some concern our Evolutionary Squadron in the Mediterranean growing each year in strength, that instead of one powerful fleet we should organise two small weak ones. For her own interests, Great Britain is forced to maintain a fleet in both the Channel and the Mediterranean. And she saw with relief the organisation of the French Squadron of the North, with which the Channel Squadron could easily deal; while at the same time our Mediterranean Squadron would also find itself face to face with a numerically much stronger English Fleet.

"This has been so self-evident that we have only had one idea in the event of a war with England, and that has been how we could manage to

effect a junction between our two squadrons; and how best to solve this problem has generally formed the theme of our annual Naval Manœuvres, and formed the base each summer of our scheme of operations. But to effect this junction is not without difficulties. We have always to bear in mind the spirit of that true saying of Captain Mahan :—'France touches both the Mediterranean and the Atlantic. The position, good as it is from one point of view, is in the end a source of weakness at sea. The French Mediterranean and Atlantic Fleets can only unite by passing through the Straits of Gibraltar. In attempting the passage they run considerable risk, and might sustain serious losses.'

"For whoever has studied closely the causes of our greatest reverses at sea, the remark of Captain Mahan stands as a truth for all time. It would seem as if history had been charged to give us repeatedly a cruel warning, which up to the present—for our misfortune perhaps—we have not yet taken to heart.

"Let us recall the conditions under which the battle of La Hogue was fought. Tourville had forty-four ships with him in the Channel, and he ought before the battle to have been joined by fifteen others from Toulon. Contrary winds prevented the concentration. The Anglo-Dutch Fleet, superior in point of numbers, was thus able to defeat our greatest admiral and to give the *coup de grâce* to the Navy of Louis XIV.

"So again with the naval actions during the Seven Years' War. Choiseul prepared an invasion of England, which ought only to have been attempted after the junction in the Channel of the two equally strong squadrons, the one from Toulon, under Admiral De La Clue, the other from Brest, under Marshal Conflans. England had also two squadrons, the first off her own coast, under the command of Admiral Hawke, the second at Gibraltar, under Boscawen. De La Cue, attempting to force a passage through the Straits, was defeated by a superior force; Conflans, thrown on his own resources, was annihilated at Quiberon. So ended the Navy of Louis XV., and all the projects of Choiseul.

"Finally, the events of 1805 are in everyone's memory. The realisation of Napoleon's plans depended entirely upon the junction of the fleets of Toulon, Rochefort, and Brest. Nelson watched Villeneuve; Rochefort and Brest were blockaded. Villeneuve, however, managed to reach Ferrol. But Nelson concentrated in the Gulf of Gascony the English divisions, rendering impossible any junction of the scattered units of the French and Spanish Squadrons, and destroyed at Trafalgar the fleet and the dreams of the Emperor.

"Should not such a series of disasters, brought about by the same cause, open our eyes? And when the concentration of our Mediterranean and Northern Squadrons is the first object to achieve, the first act to play in case of hostilities, would it not be well for France, instead of risking the whole course of operations, to be in a position from the first day of war to confront the enemy with one powerful squadron, carrying our whole fortune and our hopes?

"We ask all those who in 1900 were present at the review of the combined Northern and Mediterranean Squadrons at Cherbourg, and above all those who have been privileged during the last few years to follow the manœuvres, carried out under the authority of a loved and eminent Chief, what operation could not have been attempted by a French Fleet so well trained and with such confidence in its leader, and what good work might not have been accomplished by it?"

UNITED STATES. — *Report on Naval Ordnance.* — The annual report of the Navy Bureau of Ordnance is the valedictory as Chief of Bureau of Rear-Admiral O'Neil, who vacated his appointment last month, and he makes it the occasion for summing up his work during his period of service. When Admiral Ramsey was Chief of the Bureau of Navigation he set his face against the continuous detail of Navy officers on ordnance work. The result is shown in a decrease of efficiency. Admiral O'Neil now reports that "after an experience of several years in charge of the Bureau of Ordnance, the Chief of the Bureau is forced to the conclusion that the present method of performing important ordnance duty—that is, such as relates to the design and development of ordnance material—by the temporary detail of naval officers, is far from satisfactory." The officers are just as intelligent, and quite as efficient, as before, but they are not allowed time to study the complex problems of modern naval ordnance. The Chief says: "The Bureau is unable at the present moment to suggest a remedy for these conditions. It almost seems as if a permanent corps of specially trained officers to perform ordnance duty is necessary if we expect to do justice to this important branch of the Service. It is no exaggeration to say that should one or two officers now on duty in the Bureau be detached without proper reliefs—and proper reliefs are very hard to find—the most important duties of the Bureau would practically come to a standstill, and serious embarrassment would follow. Such a system, therefore, cannot be a good one. No private establishment would expect to maintain efficiency by changing its technical staff every year or two, and yet this is exactly what takes place in the Ordnance Department of the Navy."

The difficulty with turrets and gun emplacements, due to the great energy of the high-power guns, has been remedied, and no further difficulty is anticipated. At the gun factory, 150 new guns have been completed, and eleven 6-inch B.L. rifles converted into rapid-fire guns; 365 mounts have been manufactured, and 386 are under way. The factory is entirely inadequate to the work of supplying the new vessels with their armament, and contracts have been made with private establishments for part of the work. As it requires as much time to manufacture the armament of a battle-ship as to build the ship herself, it is contended that work on the armament should be commenced when the ship is begun. The Bureau is not averse to giving out a portion of its work to private parties, but believes that the major portion of it should be done by the Government in its own shops, in order that it may exercise full control and supervision of the work, and because it can do it in a more satisfactory manner than anyone else; and, above all, because it is deemed advisable for the Government to be in a position to control, to a great extent, the manufacture of its naval ordnance. Some of the 12-inch guns of the "Tennessee" class are a year behind, the 7 and 8-inch guns of the "Idaho" class three years, and of the "Louisiana" class the same, while the 4, 5, and 6-inch guns of the "Maryland," "St. Louis," "Paducah," "Idaho," and "Tennessee" classes are incomplete, some of them being from one to three years behind. The present output of 3-inch guns is about sixty a year. The productive capacity of the gun factory, working double time, or sixteen hours per day, is thus seen to be from 54 to 100 per cent. short of the demands made upon it by the average yearly appropriation of Congress. Working eight hours a day, the above percentage would be nearly doubled, and working the full twenty-four hours per day, the capacity will still be from 20 to 25 per cent. too small. There is a similar deficiency in the output of gun carriages.

The Bureau, therefore is of the opinion that the judicious course to pursue under the circumstances is to seek such aid as can be afforded by the Army gun factory at Watervliet, and to contract with private parties to such an extent as can be done with prudence, having due regard to the certainty of the completion of the work within the required time; getting as much work as practicable out of the naval gun factory by making such additions and improvements as are absolutely necessary at this time to enable it to maintain its maximum degree of efficiency and are most urgently required.

The only development of consequence during the past year in connection with torpedoes has been the preliminary test of a turbine-driven torpedo. So far as the action of the turbine was concerned, little was left to be desired, and its strength, simplicity, and durability commend it for use in place of the intricate and delicate engines and valve gearing heretofore used. It is the opinion of this Bureau that the most effective use of torpedoes is most likely to be obtained when they are placed on vessels designed especially to use them, such as torpedo-boats and submarine boats. Their value on board large vessels is, to say the least, problematical. In war games an arbitrary and possibly a fictitious value is given to torpedoes, and vessels having them are rated as superior to those not having them. Other things being equal, there is no question but that the use of under-water torpedo-tubes introduces a very complex system. They take up a great deal of space, and are, with their auxiliaries, quite heavy.

As the chance of hitting in a straight run is greater, the adjustable gyroscope is not commended. The torpedo is essentially a weapon of opportunity, and probably of remote opportunity. No case is recorded of one vessel having torpedoed another, nor of the use of the automobile torpedo having affected any naval combat.

The submarine tried gives promise of usefulness within their proper sphere. With increased familiarity with them, the boats are more skilfully handled, and so far as known to the Bureau they fulfil the conditions for which they were built, as far as can be determined, except in actual warfare. Their utility will, of course, depend largely upon the skill and nerve of their crews in time of war. The "Protector," built by the Lake Torpedo Boat Company, gives promise of being a useful and practicable vessel. The naval magazine at Cavite is a menace to the neighbourhood, and should be removed to a safer place. An appropriation should be made for the New England naval magazine. All target practice is to be conducted hereafter with service ammunition, in order that the gun pointers may become accustomed to firing under battle conditions, and that the ordnance outfit may be thoroughly tested at each practice. It is estimated that the cost of target practice per annum of all completed vessels will amount to $1,366,000, and when all vessels now building are completed, to $2,690,000 per annum, exclusive of the cost of targets, etc., which is very considerable. The cost of recent target practice for certain vessels is as follows:—"Indiana," $43,780·82; "Alabama," $53,989·16; "Kearsarge," $37,621·46; "Illinois," $45,486·62.

Practically all brown powder has been withdrawn from the allowance of ships, and what little remains in service afloat will soon be replaced with smokeless powder. The manufacture of smokeless powder during the past year has proceeded at a fair rate, about 900,000 lbs. more having been delivered than during the preceding year. The stability of powder of recent manufacture is of the highest order, and need cause no concern in future.

The manufacture of armour has progressed in a most satisfactory manner, showing a marked increase over the rate of delivery over the previous year. The use of capped projectiles in testing armour has resulted in an increase of its resistance to penetration. Satisfactory progress has been made in the manufacture of projectiles, and several large contracts have been given out.

It is proposed hereafter to supply telescopic sights, as well as open day and night sights, on both sides of all guns of and above 3 inches in calibre, when not mounted in turrets. Experiments are being made with telescopic sights attached to 6-pounder guns.

The condition of small arms continues unsatisfactory. It is again recommended that 15,000 guns be replaced by U.S. magazine rifles, calibre ·30.

The importance of official inspection and test of ordnance material, such as the maintenance of guns and mounts, powder, projectiles, and armour, and the installation of the two first named by commissioned line officers of the Navy cannot be too forcibly emphasised.

Congress has dealt most liberally with the Bureau. Since June, 1897, it has received appropriations to the extent of $66,000,000, and no question has ever arisen with the accounting officers of the Government or with the Department as to its disbursement.

The estimates for the coming fiscal year aggregate $16,053,933·39. Of this, twelve millions is for the increase of the Navy, $248,900 for public works, $250,000 for reserve guns, $60,000 for the Naval Militia, and the rest for general expenses.

The report closes with a word of special commendation for the present assistant chief of the Bureau, Lieutenant Volney O. Chase U.S.N., whose professional attainments, industry, good judgment, and general efficiency have rendered him a most valuable assistant.

Report of Admiral Bowles.—Coming almost simultaneously with the announcement of his resignation from the Service, the annual report of Rear-Admiral Francis T. Bowles, Chief of the Bureau of Construction and Repair of the Navy Department, is a document of exceptional interest which forcibly attests the thoroughness and breadth of his administrative methods. As a survey of the material strength of the Navy and as a summary of the results accomplished under the construction policy which he has done so much to establish, this report is at once comprehensive, lucid and encouraging. It shows at a glance that the vessels of the United States number in all 320. Of these, including vessels under repair, 252 are fit for service, 45 are under construction or authorised, and 23 are unfit for sea service. During the year the Navy lost two vessels, the tug "Leyden" by being wrecked, and the gun-boat "Monocacy," which was condemned and has since been sold.

Admiral Bowles finds that while the rate of progress on vessels now under construction is somewhat encouraging, the progress made during the fiscal year under review was, as a whole, very unsatisfactory. This is particularly true of the five battle-ships of the "Virginia" class, contracted for in February, 1901, to be completed in three years. In July, 1902, these vessels were about a year behind their contract dates, and on 30th June, 1903, they were still further behind, their progress being only half as rapid as would be required to comply with contract stipulations. The delays in war-ship construction are attributed by Admiral Bowles to one or more of the following general causes: Inadequate plans; changes in the disposition of armour or armament, or in the details of the designs

after the award of the contract; delays in the delivery of armour and ordnance; delays due to government inspection; delays due to slowness of delivery of steel and other structural materials by sub-contractors; delays due to inadequate facilities or insufficient ability in the contractors' technical staff; delays due to an inadequate supply of skilled workmen. Discussing these various causes in the order named, Admiral Bowles concludes that the most serious causes of delay are the changes in the disposition of armour or armament, slowness of delivery of armour and ordnance and the tardy deliveries of steel and other structural materials by sub-contractors and an insufficient supply of skilled workmen. He points out, however, that, notwithstanding all the difficulties and the state of the art in this country, the period actually occupied from the time orders are given to build a vessel until the time that ship is ready for commission in actual service compares not unfavourably with the best results obtained in foreign countries, namely, England and Germany. The greater apparent speed of ship construction in England is due to the fact that time is usually reckoned from the time the keel is laid until delivery of a contract-built ship. Such vessels are delivered in a very incomplete condition, and are afterwards subjected to their trials and supplied with their guns and mountings and a large amount of their equipage at the Government dock yards. The actual time from the date of contract to the date of first commissioning of the English battle-ship "Russell" is four years and one month, and that is the time which should be compared with the period of construction usually given for our vessels, which averages for the ten battle-ships already completed four years and eight months. In the German Navy the battle-ship "Wittelsbach," the keel of which was laid 30th September, 1899, and which was probably ordered several months previous to that date, has not yet been placed in service.

Admiral Bowles emphasises the point that, partly because of the desire of the Government for the early delivery of war-ships and partly because of our limited experience in building vessels of the larger types, we have fixed upon an inadequate contract period for their completion. Thus, the earliest battle-ships of the "Indiana" class had the contract time for completion fixed at thirty-six months, which was followed for all the battle-ships and larger cruisers up to 1898, when the desire for rapid construction, following the Spanish-American War, led to the cutting down of the contract time for the "Maine" class to thirty-two months; notwithstanding the fact that no battle-ship for the Government had been completed within a period of less than four years from the date of the contract. In the case of the "Maine," the only vessel of the class yet completed, the elapsed time from date of the contract to date of commissioning if four years and three months. The Admiral believes that the contract period should be adequate for construction, and therefore, should be such as to enable the Government to impose penalties called for by the contract in case of delay by the contractors, provided it had itself fulfilled the requirements as to delivery of armour and ordnance necessary to complete the work. The policy of offering a bonus for completion at an earlier date than the time called for by contract would be not unlikely to involve the Government in suits for the payment of such bonuses without the vessel being hastened in delivery in case there should be any delay on the part of the Government or failure to deliver at an early date the armour, ordnance, and other things which the Government has to furnish in order to complete the contract.

Referring to the urgent need of additional facilities for docking, Admiral Bowles states that the work of the Bureau is still embarrassed

by lack of sufficient dry docks of capacity, suited to the dimensions of battle-ships and first-class armoured cruisers. On the Atlantic coast there is but one dry dock (that numbered 3 at the Navy Yard, Brooklyn, N.Y.), which is of sufficient size to take all the vessels at their regular cruising draught. Dry dock No. 2 at that yard takes the majority of battle-ships now afloat. This condition of affairs makes it impossible to efficiently distribute the docking and current repairs of the fleet among the different navy yards so as to carry on the work expeditiously and economically. It must be expected that, as has recently happened, repairs of considerable duration must be carried on with the vessel in dry dock, and under these conditions circumstances might easily arise where the present lack of docks would seriously embarrass the efficiency of the fleet. The Bureau is of opinion that the completion of the dry docks now building at the various navy yards is a matter of great urgency.

During the year under review the Bureau inspected 250,720,754 lbs. of ship steel, of which 13·6 was rejected, surveyed and authorised repairs on 89 vessels, and conducted experiments with about 150 ship models in the experimental basin. The experimental model basin has now become indispensable to the Bureau in connection with work upon new designs, particularly those involving novel features. The final forms for the 1,000-ton gun-boats and the 13,000-ton battle-ships authorised during the last session of Congress were adopted only after a number of experiments with the view of obtaining the most desirable form in each case. The results in the case of the 13,000-ton battle-ships illustrate clearly the value of the experimental model basin. As the result of a succession of experiments with the final form adopted for these vessels a speed of 17 knots can be confidently anticipated with but 10,000-I.H.P. There are five completed battle-ships in the Navy of 11,500-tons displacement and but seven feet shorter that the "Idaho," or 13,000-ton class, which averaged on trial almost exactly 17 knots with 12,000-I.H.P. The new ships, although of 1,500-tons, or 13 per cent. greater displacement, will attain this speed with 2,000 or 16⅔ per cent. less horse-power, and if they reach on trial the same efficiency of propulsion as obtained by the best of the 11,500-ton ships will appreciably exceed the 17-knot speed. Admiral Bowles's estimates of the appropriation required for his Bureau for the fiscal year ending 30th June, 1905, amount to $23,826,860, as against $15,025,632 for the current fiscal year.

Bureau of Steam Engineering.—In his annual report as Chief of the Naval Bureau of Steam Engineering, Rear-Admiral C. W. Rae, Engineer-in-Chief, says :—

"During the past year there was completed the extended series of tests projected by the Bureau for determining the value of liquid fuel for naval purposes. The fact that these tests were made under a boiler capable of being forced to 2,000-H.P. and that an extended series of experiments had been perviously made under the same boiler with coal as a fuel made it possible to secure comparative results as to the relative economic and practical values of the two combustibles. The Bureau hopes within a few months to have the complete report of the board ready for distribution, although the labour involved in the preparation of the report is very great. By reason of the inadequate complement of officers available at the Bureau for general duty, the members of the liquid fuel board have been unable to give all their time to the preparation of the final report, and as a consequence there has been resulting delay in its preparation. The Bureau would call attention to the fact that through

the liberality of individuals, combined with the appropriations available for conducting experimental work, that probably over $200,000 was expended in carrying on these tests.

"The report of the liquid fuel board when published will be of inestimable benefit to the manufacturing, maritime, and naval world, and will show the far-reaching benefit of careful, conscientious, and extended experimental investigation. The demand for the preliminary report of the liquid fuel board and the extended and favourable notice of the work of the Bureau in the investigation of the liquid fuel problem clearly shows how appreciative the country at large is of scientific investigation conducted under Government auspices. Tests were not only made with the Texas and California products, but practically every form of burner illustrating a distinct design or principle was experimented with. It is only by reason of the fact that there were urgent demands for the services of the members of the liquid fuel board as well as for the service of the torpedo-boat "Rodgers," that had been kindly placed at the disposal of the Bureau of Navigation, that the tests were discontinued. Neither in extent nor in character have these tests been equalled either at home or abroad, and the Bureau feels assured that when the results of the experiments are made known that the necessity and advisability of conducting extended investigation in other directions will be made manifest."—*U.S. Army and Navy Journal.*

MILITARY NOTES.

PRINCIPAL PROMOTIONS AND APPOINTMENTS FOR MARCH, 1904.

Lieut.-Generals: Lieut.-General and Hon. General F. Peyton, C.B., from the Welsh Regiment, to be Colonel of the Prince of Wales's (North Staffordshire Regiment). Lieut.-General Sir C. Warren, G.C.M.G., K.C.B., is granted the rank of General in the Army. Lieut.-General Sir M. G. Gerard, K.C.B., K.C.S.I., I.A., to be a General in the Army.

Major-Generals: Major-General W. Allen to be Colonel of the Welsh Regiment. Major-General A. S. Wynne, C.B., from D.A.A.G. to the Forces to be a Major-General on the Staff to command the 10th Division and 19th Brigade, IVth Army Corps. Major-General Sir B. M. Hamilton, K.C.B., from commanding 5th Brigade, to be a Major-General on the Staff to command the 2nd Division and 3rd Brigade, Ist Army Corps. Major-General Sir J. H. T. Hildyard, K.C.B., from Director of Military Education and Training, to be a Lieut.-General on the Staff to command the troops in South Africa, and is granted the substantive rank of Lieut.-General in the Army.

Colonels: Colonel (temporary Brigadier-General) the Hon. Sir F. W. Stopford, K.C.M.G., C.B., from Chief Staff Officer, Ist Army Corps, to be Director of Military Training at Head-Quarters. Colonel (temporary Brigadier-General) J. M. Grierson, C.B., C.M.G., M.V.O., from Chief Staff Officer, IInd Army Corps, to be Director of Operations at Head-Quarters. Colonel J. S. Ewart, C.B., from Deputy Military Secretary, to be Military Secretary to the Secretary of State for War, and Secretary of the Selection Board. Colonel P. H. N. Lake, C.B., from A.Q.M.G. at Head-Quarters, to be a Brigadier-General on the Staff and Chief Staff Officer, IInd Army Corps, with the temporary rank of Brigadier-General whilst so employed. Lieut.-Colonel and Brevet Colonel W. E. Blewitt, C.M.G., from R.A., to be Commandant, School for Horse and Field Artillery, and is granted the substantive rank of Colonel in the Army. Colonel (tem-

porary Brigadier-General) E. M. S. Crabbe, C.B., from Chief Staff Officer IVth Army Corps, to be Chief Staff Officer, Ist Army Corps, retaining his present grading and the temporary rank of Brigadier-General. Lieut.-Colonel and Brevet Colonel the Hon. A. H. Henniker-Major, C.B., from h.p., to be a Brigadier-General on the Staff, and to be Chief Staff Officer, IVth Army Corps, with the substantive rank of Colonel in the Army and the temporary rank of Brigadier-General whilst so employed. Colonel R. A. P. Clements, D.S.O., A.D.C., from h.p., to be a Second Class District Commander in India, and is granted the rank of Major-General in the Army. Colonel F. J. W. Eustace, C.B., from Commandant School for Horse and Field Artillery, to be a Major-General on the Staff to command the Royal Artillery, Ist Army Corps, with the rank of Major-General in the Army. Lieut.-Colonel and Brevet Colonel G. P. Bourcicault, from A.S.C., to be a Colonel on the Staff and Director of Supplies and Transport in South Africa, and is granted the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel J. Hotham, Colonel on the Staff for Royal Artillery, is granted the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel T. E. Hickman, C.B., D.S.O., Colonel on the Staff, Eastern Sub-District, Cape Colony, is granted the substantive rank of Colonel in the Army. Lieut.-Colonel and Brevet Colonel R. F. Lindsell, C.B., A.A.G., Bloemfontein District, is granted the substantive rank of Colonel in the Army. Major and Brevet Lieut.-Colonel B. R. Mitford, D.S.O., A.A.G., Transvaal District, is granted the substantive rank of Colonel in the Army.

HOME.—MEMORANDUM OF THE SECRETARY OF STATE FOR WAR RELATING TO THE ARMY ESTIMATES FOR 1904-05.

Comparison with Estimates for 1903-04.—The total number of men to be voted is 227,000, and shows a decrease of 8,761 as compared with the numbers voted for 1903-04.

Of this decrease, 4,200 is due to the increased garrison of South Africa being found in 1904-05 within the ordinary establishments, instead of being provided for by a vote of temporary additional numbers, as in 1903-04.

The balance of 4,561 is due to decreases on the Field Artillery, owing to the transfer of three batteries to the Indian Establishment, and on the infantry, owing to reductions in the establishment of regiments of Foot Guards (except the Irish Guards), and of Infantry of the Line at home and in South Africa. The establishment of the Royal Garrison Regiment has also been reduced from eight battalions to five battalions and a depôt. On the other hand, there are small increases in the Royal Army Medical Corps and the Army Pay Corps.

The Army Estimates (including the Ordnance Factories Vote) for 1904-05 amount to £28,900,000, as compared with £34,500,000, the total of the original Estimates for 1903-04, a decrease of £5,600,000, or of £8,300,000 if the Army Supplementary Estimate of 11th February for £2,700,000 is taken into account.

Limiting the comparison to original estimates, the main reductions for extraordinary services are :—

		£
a.	Mowatt reserves of stores	1,750,000
b.	South Africa — including compensation claims and other charges	3,070,000
c.	China and Somaliland	500,000
		5,320,000

But against these reductions there must be set various increases which have to be provided for, viz. :—

		£
a.	The grant of "Service" pay	750,000
b.	Growth of Army Reserve	210,000
c.	Military Works Acts annuities	98,000
d.	Militia—full number of battalions training	70,000
	Total	1,128,000

The above increases have been met, and a further saving of £280,000 effected as follows :—

		Saving. £
1.	Reduction of Establishment of Foot Guards by 94 men per battalion	50,000
2.	Reduction of Establishment of Infantry of Line at Home by 50 men per battalion	175,000
3.	Discontinuance of enlistment into the Militia Reserve	100,000
4.	Reduction of Vote for Ordnance Factories ...	185,000
5.	Reduction in Vote for Stores and Clothing owing to surplus stocks available after the war	750,000
6.	Miscellaneous, including Deferred Pay, &c.	148,000
		1,408,000

Outstanding Charges.—It is hoped that all outstanding charges in connection with South Africa and China will be covered by the grants in 1903-04, and will be brought to account against that year.

Somaliland Expenditure.—As regards Somaliland, in view of the impossibility at the present moment of forecasting the duration of the operations, no provision has been made in these Estimates for any expenditure in 1904-05.

It is hoped that in the course of a few weeks the War Office will be in a better position to judge of the situation, in which case an additional estimate will be presented.

South African Garrison.—Provision has been made in these Estimates for a permanent garrison in South Africa of about 21,500 men, comprising 4 cavalry regiments, 2 batteries Royal Horse Artillery, 12 batteries Royal Field Artillery, 2 companies Garrison Artillery, 6 companies Royal Engineers, 10 Line battalions, 4 garrison regiments, together with the necessary departmental units.

The excess cost of maintaining this force in South Africa, instead of at home, is estimated at £1,360,000, for which provision is made in these Estimates.

Permanent accommodation for the troops in South Africa will, it is hoped, with the exception of that from those stationed at Pretoria, be provided during the early part of the summer. At Pretoria, owing to a subsidence and consequent cracking of a portion of the new reservoir, the General Officer Commanding has just reported that the permanent barracks for a part of the garrison will not be ready until September next. Married quarters for the normal married establishment of units will, it is hoped, be ready by June next. For the married families of the Royal Garrison

Regiments over and above 60 per regiment, it will not be ready until the end of December.

Armaments and Reserves under the Mowatt Programme.—Of the 10½ millions which it was decided in 1900 to spend on the completion of coast defences and the provision of reserves of stores and clothing, £8,700,000 was for armaments, stores, and clothing, the remainder being for fortifications and storehouses, provision for which is made by loan.

At the end of March, 1904, the reserves of general stores and of clothing will be practically complete. The whole of the artillery and machine guns will also have been finished by that date, with the exception of some of the reserves of the heaviest natures, in the manufacture of which there has been some delay, and of some siege artillery, the patterns of which have not yet been settled. The sum required to complete this programme—about £400,000—has been provided in the Estimates. Further particulars, showing the progress made, will be circulated shortly.

The recommendation of the Mowatt Committee is accepted, to the effect that the approved scale of reserves shall be permanently maintained, and that in the event of any stores or clothing being withdrawn for service, they shall be immediately and automatically replaced.

New Patterns of Artillery and Rifles.—New patterns of quick-firing equipments for both Horse and Field Artillery have been selected, and manufacture is about to commence. An improved pattern of rifle was approved in 1903, and for some months past both Government factories and contractors have been engaged on its manufacture. Deliveries of the new arm will be commenced at an early date.

It has been decided to concede to the Indian Government priority of supply of the new artillery equipments, as well as a large share of the first year's deliveries of rifles.

It will not be possible to secure delivery during 1904-05 of more than the number of complete batteries assigned to India; but manufacture will be in full swing in the latter part of the year, and rapid deliveries of batteries for the Home Army will take place throughout the following year. Arrangements are being made to complete practically the whole rearmament, together with a large number of reserve batteries, by the 31st March, 1907, at a total cost of about £3,150,000. This will involve a considerable increase on the Army Estimates of 1905-06 and 1906-07.

Recruiting.—The report of the Inspector-General of Recruiting dealt only with the first 9 months of 1903. The total number of ordinary recruits taken during the whole year (excluding those for Colonial Corps, etc.) was 40,339, as compared with 50,753 in 1902. In January, 1904, the number was 5,225, as compared with 5,818 in January of the preceding year.

Comparative Statement of Expenditure.—In accordance with the recommendation of the Select Committee on National Expenditure, a comparative statement of the expenditure, under Votes, for a series of years, has been prefixed to these Estimates.

H. O. ARNOLD-FORSTER.

War Office,
27th February, 1904.

Army Estimates, 1904-05.—The detailed Army Estimates for 1904-05 have been issued as a Parliamentary paper [73]. The following is an abstract of the more important figures :—

Nos. Votes.	——	Net Estimates.		Difference on Net Estimates.	
		1904-1905.	1903-1904.	Increase.	Decrease.
	I.—Numbers.	Total Numbers.	Total Numbers.[‡]	Numbers.	Numbers.
A	Number of Men on the Home and Colonial Establishments of the Army, exclusive of those serving in India	227,000	235,761	—	8,761
	II.—Effective Services.	£	£	£	£
1	Pay, etc., of Army (General Staff, Regiments, Reserve, and Departments) ..	9,746,000	9,647,000	99,000	—
2	Medical Establishment:—Pay, etc.	484,000	530,000	—	46,000
3	Militia:—Pay, Bounty, etc.	817,000	907,000	—	90,000
4	Imperial Yeomanry:—Pay and Allowances	468,000	480,000	—	12,000
5	Volunteer Corps:—Pay and Allowances	1,220,000	1,280,000	—	60,000
6	Transport and Remounts...	1,519,000	1,838,000	—	319,000
7	Provisions, Forage, and other Supplies (including South African Compensation Claims)	4,582,000	6,895,000	—	2,313,000
8	Clothing Establishments and Services	1,156,000	1,822,000	—	666,000
9	Warlike and other Stores:—Supply and Repair ...	2,839,000	4,820,000	—	1,981,000
10	Works, Buildings, and Repairs:—Cost, including Staff for Engineer Services	1,918,000	1,920,000	—	2,000
11	Establishments for Military Education	146,000	134,500	11,500	—
12	Miscellaneous Effective Services	73,000	62,000	11,000	—
13	War Office:—Salaries and Miscellaneous Charges...	331,000	331,500	—	500
	Total Effective Services...	25,299,000	30,667,000	121,500	5,489,500
	III.—Non-Effective Services.	Total Numbers.	Total Numbers.	Numbers.	Numbers.
14	Non-Effective Charges for Officers, etc.	1,666,000	1,638,000	28,000	—
15	Non-Effective Charges for Men, etc.	1,676,000	1,745,000	—	69,000
16	Civil Superannuation, Compensation, and Compassionate Allowances ..	189,000	195,000	—	6,000
	Total Non-Effective Services	3,531,000	3,578,000	28,000	75,000
	Balances Irrecoverable and Claims Abandoned ...	—	—	—	—
	Total Effective and Non-Effective Services ...	*28,830,000	†34,245,000	149,500	5,564,500
	Net Decrease			£5,415,000	

	1904-1905.	1903-1904.
	£	£
Repayments by Government of India, included as Appropriations in Aid of Army Estimates; other than Stores, etc., issued on Repayment:—		
To meet the Expenditure for Raising and Training Recruits for India	556,000	555,800
For Deferred Pay and Gratuities for Service on the Indian Establishment	90,000	194,200
For Non-Effective Services of the European Army serving in India	924,589	885,700
	1,570,589	1,635,700
Deduct—Contribution from Army Funds towards Cost of Garrison of Aden and Sea Transport ...	230,000	230,000
	£1,340,589	1,405,700

* In consequence of recent transfers between Army and Civil Service Estimates in respect of charges at the Tower of London, the Army Estimates are less by £4,920 than they would otherwise have been, the votes effected being 8, 12, 15, and 16.

† Exclusive of Supplementary Estimate for £2,700,000, dated 11th February, 1904.

War Office Reform.—The third and final part of the Report of the War Office (Reconstitution) Committee was issued on the 26th March. It is prefaced by a letter to the Prime Minister, in which the Committee again lay stress on the importance of accepting their scheme as a whole, describes its general outlines, and maintain that upon many material points they have done no more than adopt and develop the principles laid down by the Hartington Committee. They assert that, if the recommendations of that Commission had not been ignored, the country would have been saved the loss of many thousands of lives and of many millions of pounds, subsequently sacrificed in the South African War. They again urge the vital importance of maintaining the continuity of the work of the Defence Committee. Part III. of the Report is in ten sections. It embodies no new principles, but describes and explains in detail the nature and the duties of the various officers and departments in the War Office as reconstructed under the new scheme. In a concluding section the Committee sum up the objects which their proposals are intended to realise, and point out the part which should be filled by each department in the general plan.—*Précis from the "Times."*

EUROPE.—*Barrel Recoil Field Guns.*—The following is a short summary of the present position of barrel recoil field guns amongst the European Powers:—

France.—The French Model 1897, a barrel recoil field gun with protective shields, was designed by Colonel Deport and built in the Government workshops at Bourges.

Norway experimented with barrel recoil guns from St. Chamond, Schneider-le-Creusot, and Ehrhardt Düsseldorf, and decided in favour of the last named, ordering 22 batteries. Its great weight, viz., 2,209 lbs., makes the task of providing the gun with shields (a question which has only been considered after the guns were ordered) a difficult one.

Sweden.—When trials began in Sweden, Cockerill and Krupp were the only competitors. The two French firms, Schneider and St. Chamond, who

wished to compete, found it impossible to fill the specification as to weight of the unlimbered gun. The Krupp material was adopted. For the mounted artillery (3 batteries of 4 guns each), Krupp's short recoil gun with spring-spade, and for the remainder of that arm, Krupp's barrel recoil gun was adopted; 72 of the latter and 66 ammunition wagons were ordered in Essen.

Denmark.—The selection trials began in 1901 and were concluded in 1902. Schneider, Krupp, Ehrhardt, and Cockerill competed. Krupp's barrel recoil gun was adopted, and in October, 1902, an order for 128 guns with ammunition wagons was given, which should be ready on 1st April, 1904.

Switzerland.—The Swiss trials were most exhaustive; nearly all the leading gun factories of the world competed. Cockerill, Ehrhardt, Krupp, Schneider, and Skoda, in Pilsen, Austria, exhibited their latest models. St. Chamond had also been invited, and had accepted the invitation to compete, but did not deliver its gun in time, and consequently did not participate in the trials. Later on this gun was inspected at St. Chamond, but without result. Krupp's barrel recoil gun was successful, being considered far in advance of the other competitors. Switzerland ordered 340 of these guns from Essen.

Turkey sent several Commissions to Krupp's, and on two occasions also to other works, and then decided for Krupp's barrel recoil gun, ordering 184 guns (sixteen batteries of 6, and twenty-two batteries of 4), with all accessories, *i.e.*, ammunition and battery wagons, harness, and an adequate supply of ammunition.

England has been experimenting for years, beginning before the South African war, and continuing after it, and has now chosen a barrel recoil gun with shields, which combines the best characteristics of the designs of the two private firms of Armstrong and Vickers. Both these firms are at present busy with a large contract, and it is hoped that the artillery, or at least the greater part of it, will be armed with the new gun for the next manœuvres.

Spain, after long trials, two years ago ordered 120 guns of an intermediate design at St. Chamond and at Krupp's, which were delivered in 1902. The carriages carried hydraulic brakes and return springs with spade. At the same time 24 barrel recoil guns were ordered from the Creusot works; but repeated difficulties arose when the guns were presented for approval. Last spring the Spanish Government invited a new competition for barrel recoil guns, but has now given up the idea of experimenting at home. A special Commission of inquiry has been sent to France, England, and Germany.

Portugal has also lately sent a special Commission to different countries to gather information from the prominent gun makers. The Commission has now returned and delivered its report, on the strength of which it has been decided to make the final trials with the proposed gun models in Portugal itself. The proposed constructions are those by Schneider and by Krupp.

Belgium.—Competitive trials are, at the present time, being conducted with barrel recoil guns from Cockerill, St. Chamond, Krupp, Ehrhardt, and Skoda. Cockerill has also entered one gun of a rigid recoil design from a battery ordered three years ago, and under trial now by the Belgian artillery. There is, however, little hope of this gun being adopted. A

majority of the board has declared for the barrel recoil system. It is still doubtful which of the competing designs will be selected.

The Netherlands.—The Government has brought in a Bill for the re-armament of the Dutch field artillery with barrel recoil guns after Krupp's design. The report states that since the trials, in which Krupp, Ehrhardt, and Schneider competed, the conviction has been arrived at that "Krupp's 3-inch barrel recoil gun decidedly deserved the preference, and was to be recommended in every respect for adoption." 204 guns and 408 ammunition wagons, and 200 more ammunition wagons for the artillery park are required, besides the ammunition, battery wagons, accessories, the total cost amounting to seven million guilders; the latter are, as far as possible, to be made in the country; 425,400 guilders are asked for this year, principally to pay for a complete battery for practice on the proving grounds of Oldebrock.

Italy has nearly completed 540 3-inch field guns after a design similar to Krupp's short recoil gun, but has had many difficulties regarding the delivery by the Italian workshops. In the meantime, the barrel recoil system has come into favour there as elsewhere; in all probability, therefore, the rest of the Italian artillery will not be armed with the former gun. Trials with barrel recoil guns are going on, but have not yet been concluded.

Germany.—Trials are now going on to alter the field guns, Model 1896, into barrel recoil guns. Twelve batteries of altered guns both without and with shields were used in the last Imperial Manœuvres, and have given satisfaction.

Austria.—The barrel recoil system has been adopted in principle, but the special model has not yet been decided upon.

Russia has been experimenting for years, and has for the time being adopted a model with glycerine brake and india-rubber return springs lodged in the body of the carriage, after a design by General Engelhardt. A large number of guns, it is said 1,200, have been ordered in the workshops of Putilow. This model is, however, not yet generally adopted. It would rather appear that an improved type will in the end be adopted for the remainder of the Russian artillery.

Roumania.—In 1898-1899, competitive trials were made with five different models. One was designed by the Roumanian Colonel Perticari, with a Darmancier carriage; the others were from St. Chamond, Krupp, Schneider, and Hotchkiss. In 1900 the trials were interrupted, and later taken up again. At present a battery of Krupp barrel recoil guns is being experimented with.

Servia apparently also contemplates a re-armament of her field artillery. It is stated that trials will be made with a battery ordered from Skoda before the death of King Alexander, and probably, too, with other models.

Bulgaria and Greece.—It is not known whether these countries have taken any steps as yet for the re-armament of their artillery, at least nothing of the kind has been published.

To sum up: Eight among the nineteen Governments mentioned have decided the gun question in favour of the barrel recoil gun; nine others have partly concluded it, or are still engaged in trials; two have not yet done anything in the matter. Among the eight which have arrived at a decision, only two—England and France—were able to draw from models designed

at home; the other six had to fall back on foreign gun factories, and in all these cases the German makers have been victorious. In five of them the Krupp Company, and in the case of Norway, where Krupp did not compete, Ehrhardt-Düsseldorf.—*Précis from Jahrbücher für die Deutsche Armee und Marine.*

AUSTRIA-HUNGARY.—*Dearth of Re-Engaged Non-Commissioned Officers.*—During the last few years an improvement has been made in the pecuniary position of re-engaged non-commissioned officers of the Austro-Hungarian Army, with a view of increasing their numbers. The *Militär-Wochenblatt* gives the following information on the subject, which proves that although this measure has given good results, it is still far from providing a sufficient complement.

The number of re-engaged non-commissioned officers, which was only 14,180 in 1902, amounted in 1903 to 14,823, or an increase in one year of 643. The Austro-Hungarian military authorities are, nevertheless, not satisfied with this result. With the introduction of the two years' period of service, now on trial, they wish to have 31,000 re-engaged non-commissioned officers available. The German journal is of opinion that the latter number is still insufficient, in comparison with the German Army, and considers that in order to place the Austro-Hungarian on the same level as the German Army, the number of re-engaged non-commissioned officers should amount to at least 40,000, or, better still, to 45,000. It is doubtful if even 31,000 of these non-commissioned officers will be easily obtained, for the increase of 643 of them in one year, although appreciable, does not evince any great attraction for this position amongst the young men connected with the Service. At the present moment hardly a quarter of the non-commissioned officers are re-engaged men.

No comparison can, however, be made of the effective of the re-engaged non-commissioned officers of the various corps. The number for each corps is not fixed by regulation; all are taken who wish to remain. The result is that the number of re-engagements varies in regiments, according to the garrisons they are quartered in and the nature of the recruiting. Corps which are recruited in districts where the population is a poor one, as a rule furnish more re-engagements than those recruited from more well-to-do districts. Special branches of the Service, such as artillery, pioneers, railway and telegraph troops, have, as a rule, a number of non-commissioned officers recruited from the working classes in large towns who are glad to receive a fixed rate of pay, even though it be a poor one, with the certainty of obtaining State employment later. The various races of the Empire, too, show a very unequal taste for re-engagement. Thus, Slavs, Poles, and Croatians furnish the greater number of re-engaged non-commissioned officers. Magyars, on the other hand, provide the smallest number. As regards Germans, there are great differences, according to the provinces and the nature of the population; thus, mountainous districts yield hardly any re-engagements, whilst larger towns provide a strong proportion.

In the infantry the average number of re-engaged non-commissioned officers is 71 per regiment. The regiment having the most, 129, is the 55th Regiment, almost entirely composed of Slavs; and the two next most favoured regiments are the 15th and 24th, also composed of Slavs. The 76th Regiment, which is the least well provided, is recruited from Magyars and Germans. In the cavalry the average number is 60 per regiment; in

the 3rd Uhlans there are 92, there being from 13 to 15 re-engaged non-commissioned per squadron, and nearly all the lance-corporals and trumpeters are re-engaged men. This is a Polish regiment. On the other hand, the 1st Dragoons, recruited in Bohemia (Czecs and Germans) have only 41 re-engagements. In the field artillery the average number is 30 per regiment. The favourite regiments are the 10th and 11th, recruited from Poles and Slavs, which have each 72 re-engaged non-commissioned officers; the least favoured regiments are the 13th, 14th, and 15th, Magyars, which have only 20 each. The varied composition of the foot artillery regiments prevents any useful comparison in the number of re-engaged non-commissioned officers. In the pioneer battalions the number varies from 39 in the 10th (Poles and Slavs), to 21 in the 13th Battalion (Magyars). In the transport it varies from 76 in the XVth Army Corps, quartered in Bosnia, which has almost its war strength, to 16 in the VIth Army Corps. The railway and telegraph troops, which are recruited from the whole of the Empire have 52 re-engaged non-commissioned officers for 3 small battalions.

BULGARIA.—*Reorganisation of the Army.*—From the commencement of the New Year a most important reorganisation of the Bulgarian Army has been carried out as follows :—

1. *Infantry.*—9 instead of 6 divisions, each consisting of 2 brigades, making 18 brigades of 2 regiments each, instead of 12 brigades as formerly. In the place of the former 24 Line and 12 Reserve regiments there will now be 36 Line regiments of 2 battalions of 4 companies each. There will, in addition, be an independent disciplinary company. The strength of each infantry regiment has been fixed at 817 combatants and 35 non-combatants.

2. *Cavalry.*—The hitherto permanent 4 cavalry regiments of 4 squadrons, the 6 divisional cavalry regiments of 2 squadrons, and the life guard squadron will now be formed into 2 brigades of 2 regiments of 4 squadrons each, and 6 divisional cavalry regiments of 2 squadrons each. The life guard squadron will be changed into a life guard regiment of 2 squadrons. The strength of each cavalry regiment of 4 squadrons has been fixed at 583 combatants and 38 non-combatants, whilst that of each regiment of 2 squadrons is fixed at 292 combatants and 22 non-combatants.

3. *Field Artillery.*—The number of field artillery regiments will be increased from 6 to 9 regiments, 6 of which will have 3, and 3 of which will have 2 brigade divisions of 3 batteries each. The strength of each of these regiments has been fixed at 599 combatants and 61 non-combatants.

4. *Mountain Artillery.*—The mountain artillery, which has hitherto consisted of 3 brigade divisions of 3 batteries each, will be formed into one brigade of the same strength as formerly.

5. *Fortress Artillery.*—This will, as formerly, consist of 3 battalions of 3 companies each. The strength of each battalion is fixed at 359 combatants and 43 non-combatants.

6. *Engineers.*—These have hitherto consisted of 3 battalions of 5 companies, 2 railway and bridging companies, and 6 transport companies. They will now be formed into 9 pioneer battalions of 2 companies, 1 railway battalion of 2 companies, and 1 bridging company. The strength of each pioneer battalion is fixed at 269 combatants and 14 non-combatants.

For the carrying out of this reorganisation of the Army, the whole of Bulgaria will be divided into 9 Divisional and 36 Regimental Districts. The Staffs of the 5 infantry divisions, viz., those of Sophia, Dubnitza, Philippopel, Stara Sagora, Slivno, and of the 2 cavalry brigades of Sophia

and Philippopel, will then be fixed south of the Balkans, whilst north of the Balkans will be quartered the Staffs of the 4 infantry divisions of Vratza, Plevna, Rustchouk, and Schumla. Each infantry division will thus be quartered in its own district, and will draw its recruits and, in the event of mobilisation, its reservists from there. This regulation will also be carried out with regard to regiments and their districts, and should considerably lighten the difficulties incident to changing from a peace to a war footing. The composition of every division will be precisely similar, viz. : 2 infantry regiments of 4 battalions each, formed into two brigades; 2 squadrons of divisional cavalry, 2 artillery brigade divisions, and 1 pioneer battalion. According to the regulations, only officers of the rank of division commanders may be promoted generals, and thus only 5 colonels have been promoted to that rank. The divisions, then, will now be commanded by 8 generals and 1 colonel, the brigades by colonels, and the regiments by colonels and lieutenant-colonels.—*Précis from Internationale Revue über die gesamten Armeen und Flotten.*

FRANCE.—*Army Manœuvres, 1904.*—As was the case last year, there will be two distinct Army Manœuvres in France. The one in the East will be under the direction of General Brugère, Vice-President of the Conseil Supérieur de la Guerre; the other manœuvres in the North-West, will take place under General Hagron, member of the Conseil Supérieur de la Guerre. In the Eastern Army Manœuvres the following troops will take part :—

The VIIth (Besançon) and the VIIIth (Bourges) Army Corps, the 7th (Melun) and the 8th (Dôle) Cavalry Divisions, and a mixed division, consisting of the 5th Colonial Infantry Brigade, 2 Zouave battalions, and the 26th Chasseur Battalion. The artillery of the two army corps will be completed, as regards the VIIth Army Corps, by a brigade division of the 14th, and by one from the 20th Artillery Brigade; that of the VIIIth Army Corps by a brigade division of the 6th, and by one of the 13th Artillery Brigade. The divisional artillery of the mixed division will be entirely furnished by one of the regiments of the 19th Artillery Brigade.

In the North-Western Manœuvres the following troops will take part :—

The IIIrd (Rouen) and the IVth (Le Mans) Army Corps, and the 1st (Paris) Cavalry Division. The artillery for the two army corps will be completed, as regards the IIIrd, by a brigade division of the 2nd and another of the 19th Artillery Brigade; the IVth Army Corps will be completed by a brigade division of the 9th and one of the 10th Artillery Brigade.

Division Manœuvres, lasting for 14 days, will be carried out in the Ist (Lille), the Vth (Orleans), the VIth (Châlons), the XIth (Nantes), the XVIth (Montpellier), the XVIIth (Toulouse), the XVIIIth (Bordeaux), and the XXth (Nancy) Army Corps, as well as by the 4th Infantry Division of the IInd Army Corps.

Brigade Manœuvres for 12 days will be carried out in the IXth (Tours), Xth (Rennes), XIIth (Limoges), XIIIth (Clermont-Ferrand), XIVth (Lyons), and the XVth (Marseille) Army Corps. The troops in Corsica will carry out manœuvres for 10 days. The School of St. Cyr will participate in the 10th Division manœuvres, which will take place in August. The 3rd Division of the IInd Army Corps will not take part this year in the Autumn Manœuvres.

The Camps of Instruction will this year be distributed as follows :—Ist and IInd Army Corps, Sissonne: VIth Army Corps and 3rd Division of the IInd Army Corps, Châlons; XXth Army Corps and 9th Division Vth

Army Corps, Mailly; Xth and XIth Army Corps, Coetquidan; XIIth and XIIIth Army Corps, La Courtine; and the XVIth Army Corps, Larzac.

Cavalry Manœuvres of 11 days' duration will be carried out by the 2nd (Luneville) and the 3rd (Châlons) Cavalry Divisions, under General Poulleau, President of the Cavalry Technical Committee. The 4th, 5th, and 6th Cavalry Divisions (Sedan, Reims, Lyons) will each have 3 division manœuvres of 9 days' duration. Those cavalry brigades of army corps which do not take part in the Army Manœuvres will have 8 days' brigade drills, and will, in addition, take part in the district Autumn Manœuvres in respective army corps.

Special Manœuvres will take place in the Alps, the Vosges, in Algeria, and in Tunis.

All available Colonial troops will take part in the Autumn Manœuvres of the army corps in whose district they are quartered, with the exception of the 5th Colonial Infantry Brigade. Infantry regiments will march with their four battalions, with the exception only of those with whom no company of the 4th Battalion has been formed. The following will not take part in the manœuvres: — The 4th Battalion of the 138th Infantry Regiment at Paris, the 4th battalions of regiments belonging to the VIth, VIIth, and XXth Army Corps, which are garrisoning fortresses or frontier forts, the 159th Regiment, and the battalions of the Lyons district brigade which are quartered in the Alps.

The 145th Regiment will manœuvre with one of the divisions of the Ist Army Corps, and the Chasseur battalions will manœuvre with their army corps.

Distribution of the Army. — According to the "Répartition et emplacement des troupes de l'Armée française," which appears yearly at the end of November, the troops of the Regular Army are distributed amongst the two military governments of Paris and Lyons—20 army corps and 8 independent cavalry divisions. Each army corps consists of from 2 to 3 infantry divisions, 1 cavalry, and 1 artillery brigade, an engineer battalion, and a transport squadron. The VIth, VIIth, and the Colonial Army Corps, as well as the XIXth Army Corps in Algeria, have each 3 infantry divisions. According to information derived from the military Press—for the above-named publication makes no mention on the subject—only 63 out of the 163 regiments have been provided with a fourth battalion, as laid down by the law of the 4th March, 1897. Regiments of the VIth, VIIth, XIVth, XVth, and XXth Army Corps, as well as from the 145th to the 162nd Regiments, have each 4 battalions; the Zouaves have 5, and the Foreign and Algerian Tirailleur Regiments have 6 battalions each. The total number of battalions amounts to 697, and are distributed as follows:—

570	Battalions	amongst	163 Infantry Regiments.
30	,,	,,	the Chasseurs.
12	,,	,,	2 Foreign Regiments.
20	,,	,,	4 Zouave ,,
24	,,	,,	4 Algerian Tirailleur Regiments.
5	,,	,,	Algerian Light Infantry.
36	,,	,,	12 Colonial Regiments in the Interior.

The greater portion of the army corps have from 24 to 25 battalions. The VIth Army Corps, however, has the exceptionally large number of 53 battalions, whilst the VIIth has 44, the XIVth 42, the XVth 41, and the XXth has 37 battalions.

Some changes worthy of remark were introduced into the organisation of the cavalry at the commencement of the previous year. The number of the cavalry divisions has been raised from 7 to 8. Four of these divisions, consisting of 21 regiments, are heavy, and four, consisting of 17 regiments, are light cavalry. The former are made up of cuirassiers and dragoons, and the latter of dragoons, chasseurs, and hussars. The want of uniformity in the composition of the divisions is striking, two consisting of six, two of five, and four of four regiments. Two horse artillery batteries are attached to each division. The permanent proportion of cyclist companies and of machine gun groups will be determined later. There are two brigades with army corps, viz.: the VIth and VIIth, as having the largest number of infantry, and consist of 3 regiments each. The total number of squadrons amounts to 447.

A new organisation of the field artillery has been decided on. In the 43 regiments (including the 3 with the Colonial Army Corps) there are now 450 field, 20 mountain, and 52 horse artillery batteries. The foot artillery consists, including the 14 batteries with Colonial regiments, of 126 batteries.

The total strength of the Colonial Army amounts to 54 French infantry battalions, 52 native battalions, and 72 batteries. The Brigade of Occupation in China had, at the end of 1903, a strength of 9 battalions, a half squadron, and 9 batteries.—*Militär-Wochenblatt.*

GERMANY.—*The Imperial Manœuvres for 1904.*—The regulations for these manœuvres, which will be on a much more modest scale than those of last year, were issued on the 18th February last. According to them two reinforced army corps, the Guards and the IXth (the latter having its headquarters at Altona, and its garrisons in Schleswig-Holstein, the two Grand Duchies of Mecklenburg, and in the Hanseatic towns), will take part in them.

The Guards' Corps will be reinforced by the 8th Life Grenadiers and by the 2nd Dragoons of the IIIrd Army Corps, as well as by the Instruction Regiment of the Field Artillery School, and a balloon section. The army corps will be formed into three infantry divisions, similar to the formation adopted for the manœuvres in Pomerania in 1900. The IXth Army Corps will have attached to it the 37th Infantry Brigade and the 19th Artillery Brigade from the Xth Army Corps, the 3rd (Zieten) Hussars, and the 7th Machine Gun Detachment from the IIIrd Army Corps, and a balloon section. The IXth Army Corps includes a fifth infantry brigade, the 81st, of two regiments of two battalions, and may, therefore, also probably form a third division with it and the attached 37th Brigade. The Commissariat Columns and Transport will be formed by the 2nd Pomeranian, 3rd Brandenburg, 4th Magdeburg, 5th Lower Silesian, 6th Silesian, 7th Westphalian, 10th Hanoverian, and 11th Hessian transport battalions.

Cavalry Divisions, "A" and "B," will be formed as follows in the IXth and VIIth Army Corps:—

"*A*" *Cavalry Division* will consist of the 3rd, 18th, and 19th Cavalry Brigades, from the IInd, IXth, and Xth Army Corps, a brigade division of Horse Artillery of the Xth Army Corps, the 7th Machine Gun Detachment from the IIIrd Army Corps, and a pioneer detachment of the IXth Army Corps.

"*B*" *Cavalry Division* will be made up of the 13th, 21st, and 22nd Cavalry Brigades, from the VIIth, VIIIth, and XIth Army Corps respectively, and a brigade division of Horse Artillery of the XIth Army Corps.

These two cavalry divisions, as well as that of the Guards' Corps, will

carry out special manœuvres in the camp at Münster, Senne, and Alten Grabow. A cavalry division will also be formed in the XIIIth Army Corps, the units of which will be reinforced by the 16th Cavalry Brigade from the VIIIth Army Corps, and by the Sarrebourg brigade division of Horse Artillery from the XVth Army Corps.

The Guards' Corps, when reinforced, will consist of 36 infantry battalions, 15 squadrons, and 36 batteries; the IXth Army Corps, of 34 infantry battalions, 15 squadrons, and 36 batteries; each cavalry division of 30 squadrons, 2 batteries of horse artillery, and 1 pioneer detachment. The Guards' Corps will be commanded by General von Kessel, and the IXth Army Corps by Lieut.-General von Bock und Polach. It should be noted that infantry regiments of 2 battalions, viz., 2 in the Guards and 2 in the IXth Army Corps, will be made up to 3 battalions each by means of reservists.

Attack exercises of fortified positions, in conjunction with heavy artillery, will take place in the IIIrd and VIIth Army Corps, in the latter under service conditions. An exercise of the same nature will be carried out in the XIXth (Saxon) Army Corps, which will, on that account, have the 4th Foot Artillery Regiment, from the IVth Army Corps, attached to it.

Pioneer manœuvres will take place near Custrin, on the Oder, and near Neu-Breisach, on the Rhine; in the former the 17th West Prussian, and in the latter the 15th Alsatian transport battalions will take part.

Cavalry instruction rides will be carried out in the IVth, VIIth, IXth, Xth, XVth, XVIIth, and XVIIIth Army Corps, and in the Guards' Corps. A fortress staff ride will take place in the Vth and XVIIth Army Corps. The infantry must, as usual, return to their garrisons by the 30th September at latest.

SWITZERLAND.—*Manœuvres in 1904.*—The *Allgemeine Schweizerische Militär Zeitung* gives the following information, taken from an official circular regarding the manœuvres, which will be carried out by the IIIrd Federal Army Corps this year. According to the localities in which the preliminary drills of the various units will take place, the manœuvres will probably take place in the Thurgau Canton, and chiefly between Amriswil and Frauenfeld. The staff of the IIIrd Army Corps will assemble at Frauenfeld before the commencement of the preliminary drills.

The army corps units, with the exception of the corps artillery, which will have one brigade division at Zurich and another at Wil, will assemble in the neighbourhood of Frauenfeld; the administrative Services will assemble at Zurich. The 6th Division will carry out its preliminary drills in the Winterthur district; the 7th Division will carry out theirs in the Saint-Gall, Amriswil, Frauenfeld district. The combined division, which will represent the enemy during the army corps manœuvres, will be composed as follows:—

a. The 4th Jaeger Battalion, the 7th Infantry Brigade (13th and 14th Regiments of three battalions each), and four battalions of recruits.

b. The 4th Field Artillery Regiment, and a brigade division of the 8th Regiment.

c. The 2nd Cavalry Brigade and the 3rd Company of Guides.

The regimental and brigade manœuvres of the 6th Division will be carried out on the frontiers of Zurich and Thurgau. The division and army corps manœuvres will no doubt, take place in the Thur Valley.

Military Budget for 1904.—During their last Session the Chambers decided on the Military Budget for 1904. The expenditure amounts to 29,300,000 francs, whilst the receipts are 29,400,000 francs. Apart from dispositions necessitated by the change in the field artillery matériel, the Budget contains but few changes, the following being the most important :

Recruiting for the mounted machine-gun branch has been slightly increased, the present effective of these companies being found too weak for the multitudinous duties the men are called upon to perform, such as working the guns, reconnoitring, looking after their horses, etc.

With a view to improving the gunnery practice of the artillery, the ammunition supply has been increased for field, mountain and position batteries. For the latter the increase is principally in shells for the 12-cm. gun. Men of the IIIrd and IVth Army Corps of the Regular Army, those of the 17th Landwehr Infantry Brigade, the 9th Carabiniers Battalion and the 41st Regiment will be called out for annual drills. A mobilisation drill will be carried out by the Gothard district guard.

The number of field officers to undergo a course at an infantry musketry school has been increased from 50 to 100. The Budget provides for : A gunnery course for officers of position artillery, of which there has not been one since 1901; a course for gunners of mountain artillery (the last course was in 1897); and a tactical course for position artillery, dropped since 1899. At the request of the General Staff a carrier pigeon station has been established at Altkirch. It will be occupied during the course of the present year.

Artillery Matériel. — After lengthy experiments, in which several of the largest constructors of artillery *matériel* took part, the Swiss Federal Assembly decided, by a decree of the 23rd June, 1903, on the adoption of a field gun with recoiling barrel, with shield protection, of 75-mm. calibre, exhibited by the Krupp firm at Essen. A sum of 21,700,000 francs has been devoted to this change of *matériel* on the proviso that everything that had not necessarily to be obtained from abroad should be made in Switzerland, viz. : wheels, wagons, and ammunition. The above-named sum will be taken from the loan of 70,000,000 francs ordered on the 26th March, 1903. The number of the field guns has been made proportionate to the number of the field infantry rifles, and thus 288 Q.F. guns have been asked for, although the preceding armament consisted of 336 guns. But on the other hand the grouping of 4 guns to each battery instead of 6, increases the number of units to 72, instead of the 56 which have hitherto existed. Each battery will receive 10 wagons, and the park companies, which horse the ammunition columns, will be given 2 wagons per gun. The number and the composition of the park companies will, consequently, be altered. The ammunition supply should always be kept at 800 rounds a gun, instead of 500 provided for the old *matériel*, which has been in use for 26 years.

The Federal Council has laid down, as follows, the training to be given to the troops in the use of the new *matériel* :—Cadre courses, of 8 days' duration, followed immediately by an introductory course of 18 days will be instituted. All officers of field artillery, superior non-commissioned officers, battery sergeant gunners, and master gunners will take part in the cadre courses. The supernumerary cadres, as well as other non-commissioned officers, gunners, and drivers of the 9 junior classes of the Regular Army, will take part in the introductory courses. These courses will be carried out in the place of the ordinary training, for which the

troops are called out every two years. During the period of introduction, a coufse of training of 11 days with the old *matériel* and with reduced effectives will be organised for the manœuvres of the large units of combined arms. The following will take part in them, viz. : the three senior classes of the Regular Army, and the recruits late in joining the batteries receiving the new *matériel* during the year. The duration of the courses, including cadres, will always be for 20 days. Gunners belonging to the Landwehr (12 classes) will not be trained to the new *matériel*, as the Landwehr possess no field guns.

It is thought that in three years the whole of the organisation and training will be completed. A supplementary expenditure of 1,000,000 francs will be necessary, for training alone, including gunnery schools, to be divided between two years. The increase in expenditure, as regards ammunition alone, will consist of 300,000 francs, commencing in 1905, the year in which the above-named organisation will be initiated. — *Revue Militaire Suisse* and *Revue du Cercle Militaire*.

WAR NOTES.

The following account has been sent us by Lieutenant C. H. Browning, R.A. :—

The Opening Action of the Russo-Japanese War at Port Arthur.

I arrived at Port Arthur by rail at noon on 8th February. All the way down from Moukden there were guards along the line, soldiers at the stations, and officers and soldiers travelling in small parties by the ordinary trains. In addition, there were the troop trains, consisting of long lines of covered trucks, each supplied with a stove. These trains were moving both up and down the line; the majority going up the line to Liao-yang and Hai-cheng, in preparation, we understood, for an overland march to the Yalu. The railway runs down beside a tidal inlet into Port Arthur, and, with a slight turn to the left, stops abruptly close to the quay. The station is nothing but a wooden shed, and its position is very cramped, a road crossing it on the level just at the end of the platform, and the hill shutting it in on the land side. Just outside the station were to be seen, piled on each side of the road, great stacks of flour bags, wooden cases (said to contain vodka), and coal.

In Port Arthur itself, the business of the town seemed to be going on as if war was only a dim possibility, and, leaving out of account the private soldiers, it is little exaggeration to say that there were almost as many women to be seen as men.

The greater part of the bay east of the Tiger's Tail is very shallow. Dredging is being carried on; but at present the anchorage available in that portion of the harbour is confined to a narrow area behind and roughly parallel to the Tiger's Tail. When the fleet are all at their moorings, the ships seem almost touching, and the harbour has a very overcrowded appearance.

On the afternoon of the 8th I saw in this part of the harbour two ships that looked like cruisers, and about half-a-dozen torpedo-boats or torpedo-boat destroyers, three of which were tied up side by side at the

end of the Tiger's Tail, pointing west. The main body of the fleet were anchored outside the entrance to the harbour. Soon after midnight of the 8th, some firing was heard close to the harbour. It cannot have been very heavy or prolonged, for personally I did not hear a sound, though I was on board a merchant-ship within a few hundred yards of the entrance. But next morning the result of what we afterwards learnt was a torpedo-boat attack by the Japanese fleet was visible to all the town. Two fine Russian battle-ships, the "Tsarevitch" and the "Retvisan," were ashore at the entrance to the harbour. Even then I do not think that the reality of the situation was brought home to everyone. On shore that morning no special disturbance or commotion in the life of the place was noticeable.

In the dock basin, or East Port as it is called in the Admiralty Chart, I saw in walking round it that morning, two small white cruisers (being painted green), three torpedo-boats or torpedo-boat destroyers (one white, two grey with yellow funnels), and in the dry dock one small torpedo-boat and one gun-boat or small cruiser (both without their propellers). I should say that this dry dock was certainly too small to receive a battle-ship.

At right angles to the south side of the East Port a huge excavation, in the shape of a dock, was being made (work being carried on as usual) by hundreds of Chinese coolies in the solid rock of the hill. The *débris* was being used for filling in the wooden framework of a small dock that had already been driven out into the port, and for reclaiming gradually the freshwater lake immediately behind the dockyard walls. The space directly south of the entrance to the East Port was occupied by acres of coal, mostly, I was told, brought from Japan. In front of this coal, pointing straight across the harbour entrance, were two batteries, one of four, the other of three guns. They looked like 6 or 12-pounder Q.F. guns. Sentries were over them, and gun detachments were close behind them.

I also saw a battery of 5 guns, which must have been 9 or 10-inch, about three hundred yards to the left front of the fort on Hill 410 feet. Other forts could be seen, in outline only, along the coast.

At about 11.30 a.m. the first shot was fired from the land, and soon the firing was taken up all along the lines of the forts on both sides of the entrance to the harbour. Collectively, the firing was considerable; individually, from what could be seen, it was slow. The guns in the main fort at the entrance used black powder. Soon shells began coming over the line of hills from the attacking fleet. They fell in the fresh water lake on the hill behind the town, and in the harbour. The merchant shipping was in considerable danger; but no ship was touched, though an engineer on board the British s.s. "Hoxton Hall," lying in the East Port, was injured by a splinter. Two shells fell on the quay, one exploding and making a large hole six feet deep amongst a heap of piping on the ground, and smashing all the windows near. The other, a 12-inch (30-centimetre) shell, was visible in the afternoon, reposing peacefully unexploded in a garden close by. It is probable that all the shelling was directed against the ships and forts, and the direction of the attack seemed to be from the south-east.

Owing to a heavy mist that hung over the sea it was impossible to follow accurately the movements of the Japanese fleet; but after standing in and doing what damage it could, it turned outwards and disappeared.

Soon after twelve o'clock the firing ceased, and I saw from a hill south of the freshwater lake the Russian fleet circling immediately below. I

counted ten large ships (composed, I believe, of five battle-ships, four cruisers, and one ship of the Volunteer Fleet) and twelve torpedo-boats or torpedo-boat destroyers. Besides these there were the two battle-ships aground, the guard-ship, the ships in the East Port, and the ships in the harbour. The following table makes clear the total strength of the Russian Fleet on that day :—

——	Battle-ships.	Cruisers.	Torpedo-boats or Destroyers.	Volunteer Fleet.
Outside Harbour ...	5	4	12	1
Aground	2	—	—	—
Guard-ship	—	1	—	—
East Port	—	3	4	1
At anchor in bay ...	—	2	about 6	—
	7	10	about 22	2

The damage to the Russian side in the two attacks comprised the two battle-ships torpedoed, aground at the entrance, and two cruisers (one of which was the "Pallada," and the other the "Novik," supposed to be the fastest cruiser afloat, with a speed of 25 knots) badly damaged, with matting over holes in their sides. There were other marks of the fight to be seen—a hole near the water-line in one ship, a hole near the bow in another, a boat smashed, a funnel almost cut in two, one gun with the muzzle blown off, etc. These "holes" were partial perforations of armour; how deep and how important it was impossible to tell.

I heard on shore at a Russian hotel two days afterwards that the losses in the fleet were 28 killed and 32 wounded. On the way to the hotel I had passed a procession of about 10 to 15 coffins, so I should be inclined to think that these figures were about correct. The damage and loss to the forts were reported to be *nil*. This again I should think was about correct. I saw one civilian who had been wounded by a fragment of shell in the town.

The practical effect of the shells that fell in and around the town was trifling; but the sights and sounds they brought were more than sufficient to underline the word war for the inhabitants. The Chinese started leaving in hundreds; every ship that was allowed away was crammed with them. Chinese servants bolted; nearly all the European ladies prepared to leave, and prices went up with a rush.

It is difficult to see what purpose was intended to be served by keeping the Russian Fleet outside the harbour on February 8th and 9th. Such a disposition seemed to ignore the facts that it is the proper function of fleets to fight in the open sea, and that the protection of harbours is the function of forts, and not of fleets. The only reasons one can imagine for it are that the Japanese attack was not expected; or that the presence of the Russian Fleet inside would unduly cramp the harbour and the East Port: or a foolish bravado. The first reason carries with it its own condemnation: the second is the well-known fault of not making military considerations pre-eminent to all others in times of war; the third recalls the Middle Ages.

On Tuesday afternoon one battle-ship (the "Tsarevitch") was got off; she came past with the aid of tugs, very much down astern. She was so unweildly that she almost fouled a Norwegian steamer at anchor in the harbour.

On Wednesday and Thursday the battle-ships and cruisers were all brought into the harbour, three battle-ships and a cruiser occupying the East Port (looking like table spoons in a tea cup), the remainder anchoring in two lines round the Tiger's Tail. The torpedo-boats and destroyers were continually in and out of the harbour.

On Friday the German first-class cruiser "Hansa" arrived outside the entrance, and took off about 30 refugees, including amongst them individuals of Russia, France, America, Japan, China, Germany, and the United Kingdom.

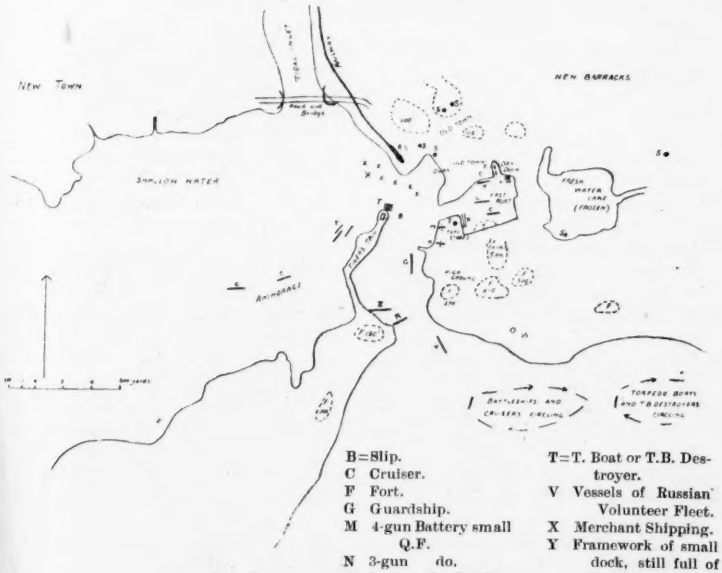
In conclusion, it is perhaps hardly necessary to say that this does not pretend to be a complete account of the events of these days. I have stated as facts only what I saw myself, and what one or two reliable people saw; rumour has been carefully specified as such. The last look at Port Arthur revealed the conspicuous and forlorn outline, half closing its entrance, of the ill-fated "Retvisan."

C. H. Browning,
Lieutenant, R.A.

Shanghai,
February 16th, 1904.

DISPOSITION OF RUSSIAN FLEET,

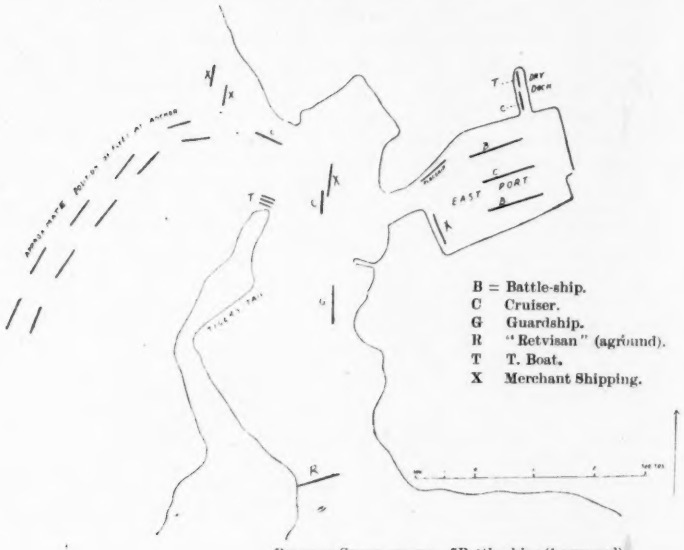
12 NOON, FEBRUARY 9TH, 1904.



B=Slip.
C Cruiser.
F Fort.
G Guardship.
M 4-gun Battery small Q.F.
N 3-gun do.
O 5-gun do. Quick (?) Guns.
S Actual spots where some shells fell.
T=T. Boat or T.B. Destroyer.
V Vessels of Russian Volunteer Fleet.
X Merchant Shipping.
Y Framework of small dock, still full of water.
Z "Tsarevitch" (aground.)
R "Retvisan" do.

DISPOSITION OF RUSSIAN FLEET,

12 NOON, FEBRUARY 12TH, 1904.



RUSSIAN SHIPS SHOWN—7 Battle-ships (1 aground).
8 Cruisers (including Guardship).
2 Volunteer Fleet.

TORPEDO-BOATS continually in and out, except the three at end of Tiger's Tail, which were never under steam.

The Japanese have still been able to preserve great secrecy with regard to their land operations. On the 1st March, however, they advanced the landing point for their troops in Korea from Chemulpo to Chinanpo, and an affair of outposts took place between Russian and Japanese troops at Pakchen, in Northern Korea, on the 7th March. On the 26th March, General Kuropatkin arrived at Harbin, assumed command of the Russian Army in the Far East, and proceeded South to Mukden. On the 29th of the month he reported that six companies of Cossacks, under General Mishtchenko, attacked four squadrons of Japanese cavalry at Chong-ju, about 50 miles north-west of Ping-yang, in Korea. The action resulted in the retirement of the Russian force, and the subsequent occupation of Chong-ju by the Japanese. It is reported that the Japanese entered Wiju on the 4th April, and that not a single Russian remains in Korea.

Vice-Admiral Makaroff, the newly-appointed Commander-in-Chief, in succession to Vice-Admiral Starck, arrived at Port Arthur on the 8th March and assumed command.

Port Arthur was again bombarded by the Japanese fleet on the 9th, 10th, and 22nd March; while an engagement on the 10th, between some Japanese and Russian destroyers, resulted in the Russian destroyer "Stereguschtshi" being sunk. On the morning of Sunday, the 27th, a fresh attempt to bottle up the harbour was made by the Japanese; four large

merchant steamers were used, but they were all four sunk, without the object of closing the channel being attained.

On the morning of the 13th inst. a terrible disaster befell the Russian fleet by the blowing up of the battle-ship "Petropavlovsk." Up to the time of our going to press, no definite information as to how the catastrophe happened was forthcoming; but it appears pretty certain that severe fighting between the two fleets occurred on that morning, and that the unfortunate ship was either torpedoed by the Japanese, or struck on one of the mines laid down at the entrance of the harbour, while making her way back. The ill-fated ship, which was flying at the time the flag of the Commander-in-Chief, Vice-Admiral Makaroff, who was on board with his Chief of the Staff, Rear-Admiral Molas, seems to have capsized and sunk immediately; the two admirals, with over 700 officers and men, going down with the ship. Among the few who were saved was the Grand Duke Cyril, a cousin of the Tsar, who was a lieutenant on board. In his report, Rear-Admiral Prince Ukhtomsky, who ha temporarily assumed the command, admits that in the fighting the battle-ship "Pobieda" was torpedoed by the Japanese, and the destroyer "Bezstrashni"; the latter foundered, but the "Pobieda" was able to reach the harbour.

NAVAL AND MILITARY CALENDAR.

MARCH, 1904.

1st	(T.)	H.M.S. "Andromeda" commissioned at Portsmouth for China.
"	"	H.R.H. the Duke of Connaught was appointed Inspector-General of the Forces and President of the Selection Board.
2nd	(W.)	H.M.S. "Renown" arrived at Plymouth from Mediterranean.
"	"	Headquarters 2nd Bn. King's Own Yorkshire Light Infantry left Malta for Crete in the "Dunera."
7th	(M.)	Headquarters 2nd Bn. King's Own Yorkshire Light Infantry arrived at Crete from Malta in the "Dunera."
8th	(T.)	H.M.S. "Latona" arrived at Spithead from North American Station.
"	"	H.M.S. "Brilliant" commissioned at Portsmouth for South Atlantic Station.
"	"	H.M.S. "Astræa" left Sheerness for the Mediterranean.
"	"	Headquarters 1st Bn. Royal Dublin Fusiliers left Crete for Malta in the "Dunera."
9th	(W.)	Port Arthur bombarded by Japanese fleet.
10th	(Th.)	Announced that in a raid in Somaliland 150 of the enemy were killed and 4,000 camels captured.
"	"	5th Dragoon Guards arrived in South Africa from India in the "Clive."
"	"	Port Arthur bombarded by Japanese fleet. Action between Russian and Japanese destroyers; the Russian destroyer "Stereguschtshi" being sunk.
11th	(F.)	H.M.S. "Barracouta" paid off at Chatham.
12th	(Sat.)	H.M.S. "Andromeda" left Portsmouth for China.
"	"	Headquarters 1st Bn. Royal Dublin Fusiliers arrived at Malta from Crete in the "Dunera."
13th	(S.)	7 German officers and 19 men were killed, and 3 officers and 2 men wounded by the Herreros in a rising in German West Africa.
15th	(T.)	H.M.S. "St. George" commissioned at Portsmouth for South Atlantic Squadron.
16th	(W.)	3rd Bn. King's Royal Rifle Corps left Cork for Bermuda in the "Dilwara."
17th	(Th.)	Field-Marshal H.R.H. the Duke of Cambridge died.

18th (F.) Sinking of Submarine "A1" off the Nab by collision, with loss of all hands.
" " H.M.S. "Russell" arrived at Plymouth from Mediterranean.
" " H.M.S. "Brilliant" left Portsmouth for South Atlantic Station.
21st (M.) H.M.S. "Edgar" paid off at Devonport.
" " H.M.S. "Crescent" left Spithead for the Cape.
22nd (T.) H.M.S. "Essex" commissioned at Devonport for Home fleet.
" " Field-Marshal H.R.H. the Duke of Cambridge was buried with full military honours at Kensal Green, in the presence of His Majesty the King.
" " Port Arthur bombarded by Japanese fleet.
23rd (W.) H.M.S. "Scylla" left Sheerness for the Cape.
26th (Sat.) The final report of the War Office (Reconstitution) Committee was issued
" " H.M.S. "Venus" left Spithead for Mediterranean.
" " Launch of the third-class cruiser "Lübeck" from the Vulkan Yard Danzig, for the German Navy.
27th (S.) General Macdonald's flying column reached Phari, Thibet, from Chumbi.
" " Unsuccessful attempt to block the entrance to Port Arthur by the Japanese by sinking four steamers in the fairway.
28th (M.) 3rd Bn. King's Royal Rifle Corps arrived at Bermuda from Cork in the "Dilwara."
" " The Japanese defeated a small Russian force at Chong-ju, Korea, and occupied the place.
29th (T.) H.M.S. "Diadem" paid off at Chatham.
" " 3rd Bn. Royal Warwickshire Regt., left Bermuda for Gibraltar in the "Dilwara."
" " General Macdonald's flying column reached Tuna, Thibet.
30th (W.) H.M.S. "King Alfred" arrived at Plymouth from China.
" " Launch of the first-class armoured cruiser "Victor Hugo" at Lorient for the French Navy.
31st (Th.) Severe fighting took place at Guru, Thibet, the enemy losing 300 killed, including the Lhassa general.

FOREIGN PERIODICALS.

NAVAL.

ARGENTINE REPUBLIC. — *Boletin del Centro Naval.* Buenos Aires: February, 1904.—Has not yet been received.

AUSTRIA-HUNGARY.—*Mittheilungen aus dem Gebiete des Seewesens.* No. 4. Pola: April, 1904.—"Observations on the Russo-Japanese War." "The Dip of the Horizon and Night Observations." "On the Use of Kites at Sea." "On a Proposed Method for Determining Position at Sea by Stellar Observations." "The United States Submarine 'Protector.'" "The Cunningham-Seaton Method for Coaling at Sea." "A New Type of Battle-ship." "On the Duties of the Navy in Relation to the Mercantile Marine." "Foreign Naval Notes."

BRAZIL. — *Revista Maritima Brazileira.* Rio de Janeiro: January, 1904.—"The 'Belgic' and the South Pole." "A Comparative Study of Foreign Navies" (*continued*). "The 'Barroso' in Chili." "The Whitehead Torpedo." "Foreign Naval Notes."

February, 1904.—"Napoleon and his Navy." "Comparative Study of Modern Navies" (*continued*). "Foreign Naval Notes."

FRANCE.—*Revue Maritime.* Paris: February, 1904.—"Hoche and the Navy in 1796: The Preparation for the Expedition to Ireland." "Nautical Instructions." "Note on the Collongue Compass Deflector." "Hydrographical Publications."

La Marine Française. Paris: February, 1904. — "A War or a Crusade?" "The Free Zone and the Neutral Zone in Upper Savoy: Their Economic and Strategic Results for the Rhone Valley and the Port of Marseilles." "The Reputed Decadence of the French Fleet." "The First Lessons of the Russo-Japanese War." "The Japanese Fleet since its Creation up to the Present Day" (*concluded*).

Le Yacht. Paris: 5th March, 1904. — "Our Modern Armoured Cruisers." "Yachting Notes." "Mercantile Marine Notes." 12th March.—"The Suppression of the Department of Submarine Defences." "Yachting Notes." "Corsair Warfare." "The First-class Armoured Cruiser 'Léon Gambetta.'" 19th March. — "Do we Require two Squadrons?" "Yachting Notes." "The Lozier Motor." "Neutral Merchant-ships in Time of War." 26th March.—"*Apropos* of the Next Congress." "Yachting Notes." "The U.S. Submarine 'Protector.'"

Le Moniteur de la Flotte. Paris: 5th March, 1904.—"The Collision Between the 'Libau' and 'Insulaire.'" "The English Naval Estimates." "The Russo-Japanese War." "The Navy in Parliament." 12th March.—"The English Naval Estimates." "The *Entente Cordiale*." "The Navy in Parliament." "The Accident to the 'Léon Gambetta.'" "The Russo-Japanese War." "The Canal Des Deux Mers." 17th March.—"The Russo-Japanese War." "The Navy in Parliament." "The *Défenses Mobiles*." 26th March.—"The Russo-Japanese War.' "The Navy in Parliament." "The *Défenses Mobiles*."

GERMANY.—*Marine-Rundschau.* Berlin: April, 1904.—"The Great Elector and Frederick the Great, and their Attitude to Naval Matters and Sea Trade." "The Sea as a Field of Operations and a Battle-field." "Sea Routes and Overland Railways and their Relation in Particular to the Nearer and Farther East." "The Russo-Japanese War." "The English Naval Estimates for 1904." "The U.S. Naval Estimates for 1904-5." "Foreign Naval Notes."

ITALY.—*Rivista Marittima.* Rome: March, 1904.—"A Large Fleet." "The German Mercantile Marine." "The Russo-Japanese War." Letters to the Director:—"Russia and Japan." "The Barbarà Electric Telegraph System Fitted on board the Japanese Cruiser 'Nisshin.'" "Alternating or Continuous Currents." "Dante and the Crews of the Fleet." "Foreign Naval Notes."

PORTUGAL.—*Revista Portugueza, Colonial e Maritima.* Lisbon: March, 1904.—"Manchuria." "The War in the Far East." "The Coast of Mozambique." "Colonial Agriculture" (*concluded*). "The Expedition to Quincunquilla" (*continued*). "Foreign Naval Notes."

SPAIN.—*Revista General de Marina.* Madrid: March, 1904.—"The Strategical Problem and the Framing of Orders." "The Fighting Characteristics of a Ship of War." "The General Conception of a Modern Navy" (*continued*). "The Russo-Japanese War." "Foreign Naval Notes."

MILITARY.

ARGENTINE REPUBLIC. — *Revista del Boletin Militar del Ministerio de la Guerra.* Buenos Aires: January, 1904.—"On Artillery Projectiles." "Moltke's Tactical Problems." "Foreign Military Notes."

February, 1904.—"Moltke's Tactical Problems" (*continued*). "Tactics of To-day." "Foreign Military Notes."

March, 1904.—"Tactics of To-day" (*continued*). "Moltke's Tactical Problems" (*continued*). "The Command of the Forces Cantoned on the 'Campo de Mayo.'" "On Artillery Projectiles" (*continued*). "Foreign Military Notes."

AUSTRIA.—*Danzer's Armee-Zeitung.* Vienna: 3rd March, 1904.—"The Conclusion of the Parliamentary Session." "Europe and the Russo-Japanese War." "The Russo-Japanese War" (*continued*). "A Strategic Necessity for Japan." "Infantry Regulations of the Principal European Powers" (*concluded*). "Critical Days for Olmütz in July, 1866." "From the Russian Military Papers." 10th March.—"The Fate of Port Arthur." "The Russo-Japanese War" (*continued*). "Our Cavalry in 1866." "Fencing for Officers in Regiments." "Field-Marshal Prince Bildburghausen and the Battle at Rossbach." "Japan's War Resources." 17th March.—"Two Old Imperial Soldiers." "The Russo-Japanese War" (*continued*). "The Strategic Problem in Eastern Asia." "Adua." "The Assault in Siege Warfare." 24th March.—"The Russo-Japanese War" (*continued*). "The Press in War." "Vega as Ordnance Constructor." "A Book that has Done its Duty." 31st March.—"The Triple Alliance." "The Russo-Japanese War" (*continued*). "The Importance of Port Arthur." "History of War." "French Army Remounts."

Organ der Militär-wissenschaftlichen Vereine. Vienna: Vol. LXVIII. Part 2. 1904.—"The Swiss Manœuvres of 1903." "A Royal Dalmatian Legion in the Service of Napoleon I." "European, Turkish, and Bulgarian Railways as Implements of War." "Attack Tactics according to Events in the South African War."

Mittheilungen über Gegenstände des Artillerie- und Genie-Wesens. Vienna: March, 1904.—"Review of the Work of the Military Technical Committee of the Engineer and Pioneer Work carried out in 1902 and 1903." "On Ballistic Apparatus." "Overcoming Dampness of Walls."

BELGIUM.—*Bulletin de la Presse et de la Bibliographie Militaires.* Brussels: 15th March, 1904.—"Application of Tactics to the Ground" (*concluded*). "Supply and Re-Supply of Ammunition of the Field of Battle." "The French Grand Manœuvres of 1903" (2 sketches). 31st March.—"The French Grand Manœuvres of 1903" (*continued*). "Military Espionage in War."

FRANCE.—*Le Spectateur Militaire.* Paris: 1st March, 1904.—"From Bourges to Villersexel" (*continued*). "The Russo-Turkish Campaign of 1877-78" (*continued*). "Political History of Annam and of Tonkin" (*continued*). "Italian Gymnastic Manual" (*continued*). 15th March.—"From Bourges to Villersexel" (1 map, *continued*). "The Russo-Turkish Campaign of 1877-78" (*continued*). "Political History of Annam and of Tonkin" (*continued*). "Recollections of Tunis and Algeria." "Italian Gymnastic Manual" (*continued*).

Revue du Cercle Militaire. Paris: 5th March, 1904.—"The Russo-Japanese War" (*continued*). "Regarding Military Manual Labour." "Non-Commissioned Officers' Meetings" (*continued*). 12th March.—"The Russo-Japanese War" (*continued*). "Regarding Military Manual Labour" (*concluded*). "Non-Commissioned Officers' Meetings" (*continued*). 19th March.—"The Russo-Japanese War" (*continued*). "Non-Commissioned Officers' Meetings" (*continued*). "Grinding and Making Bread." 26th March. — "Portuguese Troops in the Pyrenees Campaign during the Franco-Spanish War of 1793-95." "Non-Commissioned Officers' Meetings" (*concluded*). "The Russo-Japanese War" (1 sketch, *continued*).

Revue d'Artillerie. Paris: February, 1904.—"Study of Molecular Deformations of a Steel Bar under Traction." "The Vanadium" (*continued*). "Principles and Process of the Methodical Training of Horses"

March, 1904.—Has not been received.

Revue du Genie Militaire. Paris: February, 1904.—"The Acquisition of Landed Property by the War Department." "The Ferguson Cyclograph."

March, 1904.—Has not been received.

Revue de l'Intendance Militaire. Paris: February, 1904.—"Furze and Molasses." "Notes on the Chemical Analysis of Preserved Meat." "Report of the Committee of Enquiry as to the Best Methods of Purchasing Agricultural Produce by the War Department." "The Present Law on Land Warfare." "Analysis of Brazilian Coffees."

March, 1904.—Has not been received.

Revue Militaire. Paris: March, 1904.—"The Breaking off of Action." "The Draft of the Russian Field Service Regulation." "The German Ballooning Regulation." "Reorganisation of the Bulgarian Army."

Revue d'Histoire. Paris: March, 1904.—"Historical Study of Regimental Artillery." "The War of 1870-71—The 16th August in Lorraine" (*continued*).

Journal des Sciences Militaires. Paris: March, 1904.—"The New Pseudo Tendencies of the German Army" (*concluded*). "The Officer as Instructor." "The Army of the Future." "Organisation of the Colonial Army" (*continued*). "Naval Artillery" (*continued*). "Instruction of Officers by means of War Games, etc." (*continued*). "The Rôle of a Detached Corps in Modern War" (*continued*). "The War of Succession in Austria, 1740-48" (*continued*). "The German Cavalry During the Campaign of the Loire, 1870-71" (*continued*).

Revue de Cavalerie. Paris: March, 1904.—"Keep Your Sword and your Spurs." "To Amateur Strategists!" "The Origin of French Cavalry" (*continued*). "Breeds of Horses of the French Soudan." "The Art of Leading."

GERMANY.—*Militär-Wochenblatt.* Berlin: 1st March, 1904.—"The Latest Results in Ballooning, and their Importance in Regard to the Conduct of War." "A New Gunnery Procedure." "Distribution of the French Army." 3rd March.—"Part 33 of 'Kriegsgeschictlichen Einzelschriften.'" "Thoroughbred Stock and its Importance for the Army." "Intelligence from the Netherlands' Army." 5th March.—"Raising of the 1st (Silesian) Life-Cuirassier Regiment of the Great Elector." "Probable Changes in the English Army." 3rd March.—"Field-Marshal Count von Waldersee." "The Russo-Japanese War" (*continued*). "Raising of the 1st (Silesian) Life-Cuirassier Regiment of the Great Elector" (*concluded*). "The Battle of Belle-Alliance." 10th

March.—"The Question of Infantry Training." "The Russo-Japanese War" (*continued*). 12th March.—"Strategy and Tactics." "The Battle at Fröschweiller and the Pursuit of the French." 15th March.—"The Trans-Sahara Railway" (with sketch map). "The New Supplement to the Infantry Gymnastic Regulations." 17th March.—"New Statute of the Life Insurance Institution for the Army and Navy." "The Herero Insurrection" (*continued*). "Intelligence from the Russian Army." 19th March.—"Operations under Lord Roberts up to the Capture of Bloemfontein." "The Herrero Insurrection" (*continued*). "The Parade Step." 22nd March.—"The Battle at Colombey-Nouilly on the 14th August, 1870, according to German and French Representation." "Operations under Lord Roberts up to the Capture of Bloemfontein" (*concluded*). 24th March.—"Moltke's Historical Military Works." "The Italian Campaign of 1859." "The Russo-Japanese War" (*continued*). "The Battle at Colombey-Nouilly on the 14th March, 1870, according to German and French Representation" (*concluded*). 29th March.—"Characteristics of the French Army under Napoleon I." (*continued*). "The Commissariat Officer." "Intelligence from the Austro-Hungarian Forces." 31st March.—"The Russo-Japanese War" (*continued*). "Curiosities of Shooting."

Internationale Revue über die gesamten Armeen und Flotten. Dresden: March, 1904.—"Military and Naval Intelligence from Austria-Hungary, Belgium, Bulgaria, Denmark, France, Great Britain, Italy, Japan, Russia, Switzerland, Servia, Turkey, and United States." *Supplement 50.*—"The Grand French Manœuvres of 1903." *French Supplement 60.*—"The Utility of Wireless Telegraphy in Land and Naval Wars." "The Field Gun Question in Austria." "Fortresses on the Lines of Defence in Moltke's Strategy." "The New German Guns."

Jahrbücher für die Deutsche Armee und Marine. Berlin: March, 1904.—"Activity of Marshal MacMahon before the Battle of Wörth." "Infantry Shooting in Battle Formations." "Field Howitzers." "Riding Schools for the Junior Officers of the German Cavalry." "Our Military Music." "The War in the Far East."

Neue Militärische Blätter. Berlin: February. Nos. 7 and 8.—"French Military Railways and Telegraphs" (*concluded*). "Innovations and Modifications in the Organisation of Armies" (*concluded*). "Cavalry, Independent Patrols, and Mounted Infantry" (*continued*). "State of Preparation for War of the Japanese Army." "Swiss Fortifications." "Echoes from the Press." February, No. 9.—"The Russo-Japanese War." "Army Questions." "Night Fighting in Africa." "Cavalry, Independent Patrols, and Mounted Infantry" (*concluded*). March, No. 10.—"The Russo-Japanese War" (*continued*). "The Truth Regarding Ill-treatment in the German Army." "National Map Work." "Military Echoes."

ITALY.—*Rivista di Artiglieria e Genio.* Rome: February, 1904.—"The Problem of the Indirect Aiming of Fortress Artillery." "The Problem of the Inland Water Communications in Italy." "The Leading and Instruction of Artillery Scouts." "Preparation of Artillery for Battle." "The Swiss Manœuvres on the Thiele." "Radium." "Experiments in Norway with the New Field Artillery." "The Railways in Corea." "Foreign Military Notes."

March, 1904. — "The Use of Artillery in Siege Warfare, and the Speciality of Fortress Artillery." "The Walls of Lucca." "On the Efficacy of Machine Gun Fire." "New Automatic Weapons."

Rivista Militare Italiana. Rome: March, 1904.—"What does the Army Cost?" "The Regulations Relating to Subordinate Officials when Awaiting Trial." "The Russo-Japanese War." "The Dalmatian Coast Population and the Adriatic" (*continued*).

PORTUGAL.—*Revista de Engenheria Militar.* Lisbon.: January-March, 1904.—Has not yet been received.

Revista de Infanteria. Lisbon: March, 1904. — "The Directorate General of Infantry." "The Military Manœuvres in the South-East of France." "Machine Guns in the German Army." "Rifle Ranges" (*continued*). "The Militia!" "The Russo-Japanese War." "New Regulations for the Instruction of Troops and Squadrons" (*continued*).

SPAIN. — *Memorial de Ingénieros del Ejécito.* Madrid: February, 1904.—"Electro-Magnetic Apparatus for Preventing Collisions between Trains" (*concluded*). "How to Rapidly Calculate the Proportions of Armoured Cement" (*continued*). "The Balloon: An Offensive Arm." "Foreign Military Notes."

Revista Técnica de Infantería y Caballería. Madrid: 1st February, 1904.—"The Old Militia." "Military Science at Athens: Lecture—'Armour-clads and Explosives.'" "Photogrammetry" (*continued*). "Fighting on Foot by Cavalry." "Military Culture at the Commencement of the 20th Century."

Revista Científico-Militar y Biblioteca Militar. Barcelona: 10th March, 1904.—"The Neutrality of Spain." "Bizerta." "The Russian Naval Academies." "New Kind of Spur." "The Organisation of the Portuguese Army." "The Effect of Bullet Wounds on the Human Organism." "Physical Games in the Army." "Regimental Automobiles." "The Russo-Japanese War." 25th March. — "The Reasons for Military Reorganisation in Spain." "The Mobilisation and Strategic Disposition of the Belligerent Armies." "Recent Experiments with Wireless Telegraphy." "The Organisation of the Portuguese Army" (*continued*).

RUSSIA.—*Voïénnyi Sbórnik.* St. Petersburg: March, 1904.—Has not been received.

SWITZERLAND.—*Revue Militaire Suisse.* Lausanne: March, 1904.—"The Russo-Japanese War." "Military Reorganisation." "Corps Cavalry and Scouting." "The Q.F. Gun in Holland and Germany."

UNITED STATES.—*The United Service.* New York: March, 1904.—"The War in the East." "Some German Ideas on Tactics." "The Second-class of the Loyal Legion." "President Roosevelt." "Admiral and General Reynolds." "The Heroes of New York." "A Cruise on the 'Constitution.'" "Our Contemporaries." "Editorial Notes." "Service Salad." "Rear-Admiral Charles Stanhope Cotton, U.S. Navy."

The Journal of the Military Service Institution. Governor's Island: March-April, 1904.—"Annual Report of Executive Council, 1903." "*Esprit de Corps.*" "Coast Defence." "Mounted Troops." "A Colonial Army." "Necessity for Uniformity of Drill Regulations for the Artillery." "The Military Taming of the Moro." "Suggestions for Material for Volunteer Cavalry." "Pay of Non-commissioned Officers." "Pioneer Troops in the Militia." "Historical Miscellany." Comment and Criticism." "Translations and Reprints." "Reviews and Exchanges."

NOTICES OF BOOKS.

La Tactique et la Discipline dans les Armées de la Révolution. Correspondance du General Schauenbourg. By Captain J. COLIN, Captain of Artillery, and attached to the Historical Section of the French General Staff. Paris, 1902.

This work illustrates in the most striking manner the advantages that accrue to a nation from the existence of an adequate and well-organised department of Military History, for here we find collected and collated for the first time from original contemporary documents the whole genesis of the French Revolutionary Armies, whose existence alone made Napoleon's career possible. It is not too much to assert that without the information this book contains, it is impossible even for the most capable and most studious investigator to form any adequate conception of that great Commander's transcendant exploits; indeed, the greater the critical acumen bestowed upon his previously existing history the more likely it will be to lead to false conclusions. The general idea entertained of Napoleon's merits is that with an Army relatively untrained and undisciplined, he achieved astounding results by the agency of his strategic ability—using the word in its eighteenth century signification, the only meaning hitherto attached to it in this country. The real secret, however, of his success is now shown to lie in the fact that because he knew and exactly appreciated the fighting value of his men he was able to trust them in positions a less-gifted man would not have dared to occupy.

Moltke defined the Art of War as "the art of making the best practical use of means at hand for the attainment of the object in view"; but the troops themselves are essentially the "means at hand"—hence, without knowing what the spirit and capacity of these troops actually were, the principal data for judging whether the general in question did make the best practical use of his means are lacking, and the conclusion formed rests on insufficient foundations. We submit that it has been the instinctive recognition of this fundamental principle which has hitherto stood in the way of all strategical study in this country, in which, by reason of our position, we have been deprived of that substratum of first-hand knowledge which is necessary for any theory to take firm root in. We never fought the French Armies led by Napoleon in person when they were at their best, *i.e.*, before 1807, and hence, as an Army, failed to perceive the foundation on which he calculated; we had no basis of common knowledge by which to judge him and to check the statements of others, and therefore did not appreciate the true application of his teaching in this, the most important, branch of the whole Art of War.

When we read in our text-books that Napoleon defeated an enemy because his troops the night before the battle occupied certain relative positions, our common-sense revolted—the statement did not justify the conclusion, for victory is too obviously the consequence of tactical collision,

and, with equal numbers, strategic advantage previous to the battle can only be obtained at the cost of corresponding risk.

The point of his merit really lies in this: That from his knowledge of human nature and the care he had taken in the training of his men, he never, until the last, placed his troops in positions to which they were not equal.

The book consists of two parts, a preface of 134 pages of small print from the pen of Captain J. Colin, and a text of 170 of large print containing the diary of General Schauenbourg, from the 4th April to 14th August, 1793, so that the preface actually takes far more reading than the book; and as the latter is, if not unintelligible, at least quite uninteresting without the former, those who are in the habit of skipping prefaces should be grateful for this warning.

Actually, M. Colin has given us in his introductory pages the most complete and luminous essay on the evolution of French tactics from 1792 to 1815 that has yet appeared in any language, and incidentally has shown up the exceedingly superficial attention paid to this subject by German authors prior to 1870.

As all modern tactics practically have their origin in the German theories current at that period, the importance of this revelation is very great indeed. Briefly, we in England, and indeed most soldiers in Europe, have always assumed that the Germans in 1870 fought as skirmishers and in company columns, because years of thorough-going study had convinced them that this method was theoretically the best possible.

The Germans themselves never claimed finality in the matter at all, but reasoned substantially as follows:—We (*i.e.*, the Prussians) fought at Jena in "line" and were beaten by the French, who fought as "skirmishers," hence "skirmishers" are superior to "line." But these "skirmisher" tactics were the outcome of years of practical experience of warfare, and had their origin in the early days of the French Revolution, when they were introduced into the French Army mainly by Menil Durant and those Frenchmen who returned across the Atlantic after the conquest of Canada by the British.

Skirmishers, therefore, are the outcome of a long struggle for the survival of the fittest, and the last word on the whole tactical case.

Now, M. Colin's work shows the whole basis of this chain of argument to be unsound, for the good and sufficient reason that "line" was the fundamental formation for battle attack, prescribed and practised throughout the whole period from 1792 to 1807, and only departed from intentionally in woods or cover of other description, in which neither Frederick the Great nor any other advocate of the "line" would ever have dreamt of employing it. And actually he proves from the regimental diaries of the battalions engaged at Jena that every one of them fought in "line" whenever they got the opportunity.

The confusion appears to have arisen very naturally out of the difference of appearance presented by the accurately dressed slow moving lines of the Prussians, and the quicker moving, more ragged lines of the French, which the Prussians, viewing them from the front, mistook for dense swarms of "tirailleurs," overlooking the fact that the spirit of the "line," viz., the maximum possible number of weapons in the firing line, was as present with the French as on their side. It was the old mistake of failing to see the wood for the trees.

After 1806 the French frankly went over to the heavy columns, as with the short time available for training and the enormous numbers of raw troops the Emperor's methods of "strategy" required, neither they nor any other infantry in Europe, except the British, could acquire cohesion enough to enable them to advance in "line."

In addition to this most interesting tactical matter, we would call special attention to the paragraphs relating to the composition of the battalions of the French Army, both as regards men and officers with which the initial victories over the Allies were won. On the whole these were by no means as irregular as is generally supposed. The proportion of trained soldiers available to stiffen the line battalions was generally from 30 to 40 per cent.; the great trouble lay in the want of educated officers to impart instruction. It is also well worth noting that the Volunteer battalions uniformly did badly, and it was not till 1796, when the latter were finally abolished and their men amalgamated with the Regulars, that the fighting efficiency of the infantry rose to a reasonable height.

South African War Record of the 1st Battalion Sherwood Foresters (Derbyshire Regiment), 1899-1902.

It were well if every unit in the Service which took part in the South African War possessed an accurate and complete record of its services in that important campaign. The present publication is an effort on the part of Lieut.-Colonel H. Wylly, C.B., commanding the battalion, to provide one for his regiment. This edition is merely the foundation of what is intended to be a permanent record, and it is interleaved so that those more immediately concerned may be able to make such corrections and additions as may be necessary. It is divided into five parts. The first treats of the mobilisation of the battalion and Colonel Smith-Dorrien, its arrival in South Africa, and service in Cape Colony prior to taking part in Lord Roberts's advance. The second is occupied with the good work done by the regiment in the Orange Free State and Transvaal in Lord Roberts's advance, including the occupation of Kroonstadt, the battle of Dornkop, action of Diamond Hill, and the occupation of Pretoria. The third chapter supplies the events of the action of Wittebergen and the surrender of Prinsloo's force. The fourth deals with the operations in the Western Transvaal after Colonel Wylly assumed command of the battalion, when it served with the force under Colonels Dixon and Kekewich, and took a prominent part in the engagements at Vlakfontein on May 29th and Moedwil, on September 30th, 1901. It was of its service at this period that Lord Kitchener described it as one of his most trusted battalions. There are also two chapters which tell of the good work done by the two mounted infantry companies under Major Godley and Captain Leveson-Gower.

It is known what very creditable service the battalion performed during the war, and we may gather this from there being no fewer than thirty-two mentions of the officers in despatches, and two Victoria Crosses and sixteen Distinguished Conduct Medals awarded. The casualties in the battalion amounted to sixty killed, or died of wounds, fifty-eight died of disease or drowned, and forty-six wounded, including nine officers. Colonel Wylly's publication is specially interesting to all who served with the 1st Sherwood Foresters in South Africa, and will no doubt be welcomed by all ranks.

PRINCIPAL ADDITIONS TO LIBRARY DURING MARCH, 1904.

The Path of Empire. By GEORGE LYNCH. 8vo. 10s. (Duckworth & Co.) London, 1903.

Korea. By ANGUS HAMILTON. 8vo. 15s. (William Heineman.) London, 1904.

Notes on Mounted Infantrymen. By Captain L. SANDERSON. Demy 12mo. 1s. (Presented.) (Gale & Polden, Ltd.) Aldershot, 1903.

German Official Account of the War in South Africa, October, 1899, to February, 1900. By Colonel W. H. H. WATERS. Translated from the German. 8vo. 15s. (John Murray.) London, 1904.

Manchuria and Korea. By H. J. WHIGHAM. 8vo. 7s. 6d. (Isbister & Co., Ltd.) London, 1904.

Journal of the Royal Agricultural Society. Vol. 64. 8vo. (Presented.) (John Murray.) London, 1903.

Report of the Secretary of the United States Navy for 1903. 8vo. (Presented.) Washington, 1903.

Army Signalling Regulations for 1904. Official. Demy 12mo. 9d. (Presented.) (Harrison & Sons.) London, 1904.

La Guerre de 1870-1871 : Réflexions et Souvenirs. By Général ZURLINDEN. 8vo. (Presented.) (Librairie Hachette et Cie.) Paris, 1904.

Unbeaten Tracks in Japan. By ISABELLA L. BIRD. 8vo. 7s. 6d. (John Murray.) London, 1893.

Japan in Transition. By STAFFORD RANSOME. 8vo. 16s. (Harper Bros.) London, 1899.

Queer Things about Japan. By DOUGLAS SLADEN. 8vo. 21s. (Anthony Treherne and Co., Ltd.) London, 1903.

Archæologia. Society of Antiquaries. Imp. 8vo. (Presented.) (J. B. Nichols & Sons.) London, 1903.

The Binding of the Nile and the New Soudan. By Hon. SIDNEY PEEL. 8vo. 12s. 6d. (Edward Arnold.) London, 1904.

Lucretia Borgia. By FERDINAND GREGOROVIUS. 8vo. 10s. 6d. Translated by J. L. GARNER. (John Murray.) London, 1904.

The Penetration of Arabia. Exploration Series. By D. G. HOGARTH. 8vo. 7s. 6d. (Lawrence and Bullen.) London 1904.

Three Years in the Klondike. By J. LYNCH. 8vo. 12s. 6d. (Edward Arnold.) London, 1904.

Naval Development in the Century. By Sir N. BARNABY. 8vo. 5s. (W. & R. Chambers, Ltd.) London, 1904.

Strategy and Tactics in Mountain Ranges. By T. MILLER MAGUIRE. 8vo. (Presented.) (William Clowes & Sons, Ltd.) London, 1904.

The South African War Record of the 1st Battalion Queen's Own Cameron Highlanders, 1900-1-2. 8vo. (Presented.) (Northern Counties Printing and Publishing Co., Ltd.) London, 1904.

The History of Nadir Shâh. By JAMES FRASER. 8vo. (W. Strahan.) London, 1742.

The Development of Tactics since 1866. By T. MILLER MAGUIRE. 8vo. 3s. 6d. (Presented.) (Hugh Rees, Ltd.) London, 1904.

The Rise and Progress of the Standard Oil Company. By G. H. MONTAGUE. 8vo. (Presented.) (Harper Bros.) New York, 1904.

Methods and Processes Adopted for Production of the Maps of the Ordnance Survey. 2nd Edition. Roy. 4to. (Darling & Son, Ltd.) London, 1902.

Letters on Applied Tactics. By Major GRIEPENKERL. Translated by a Retired Officer. 3rd Edition. 8vo. (Presented.) Hugh Rees, Ltd.) London, 1904.

THE BARR AND STROUD INFANTRY RANGEFINDER.

THE BARR AND STROUD INFANTRY RANGEFINDER.

THE NEW AUSTRO-HUNGARIAN BATTLE-SHIP "ARPAD," 8,340 Tons; 11,900 I.H.P.; Speed, 18 Knots.

ARMOUR PROTECTION.—Partial Hard-Steel 8·7-inch Belt from 4·5 feet below water-line to lower deck; from lower to main deck a 4-inch belt; on bow to height of lower deck, 2-inch; Barbettes for heavy guns, 8·5-inch; Transverse Bulkheads, 8-inch; Casemates, 5-inch; Armoured Deck, 2·6-inch; Conning Tower, 8-inch.

ARMAMENT.—Three 9·4-inch guns, two in foremost barbette, one in after; Twelve 5·9-inch Q.F. guns in double casemates; six 12-pounder Q.F. guns; twenty small Q.F. and machine guns, with two submerged torpedo-tubes.

J. J. K. & Co., Ltd., London